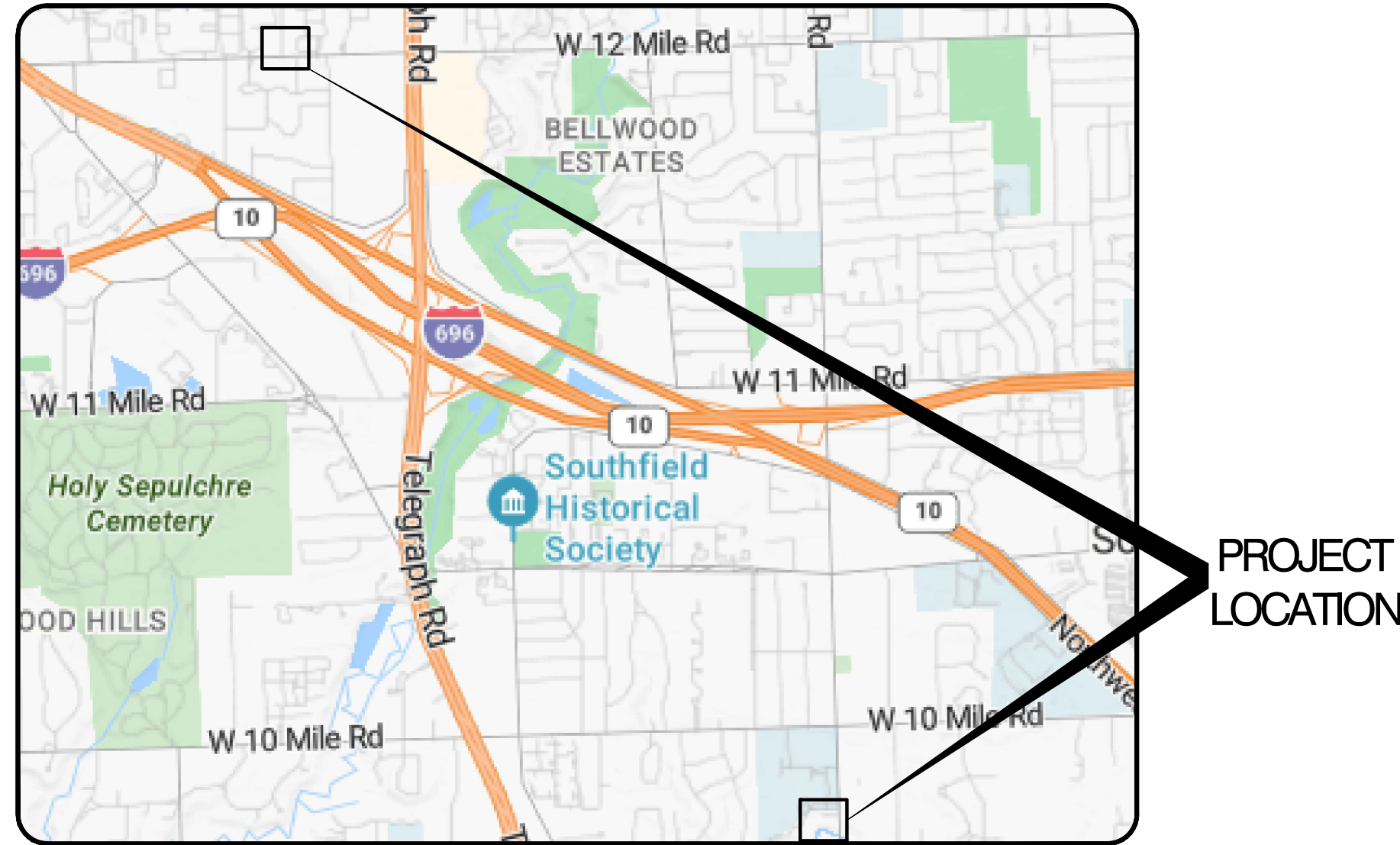
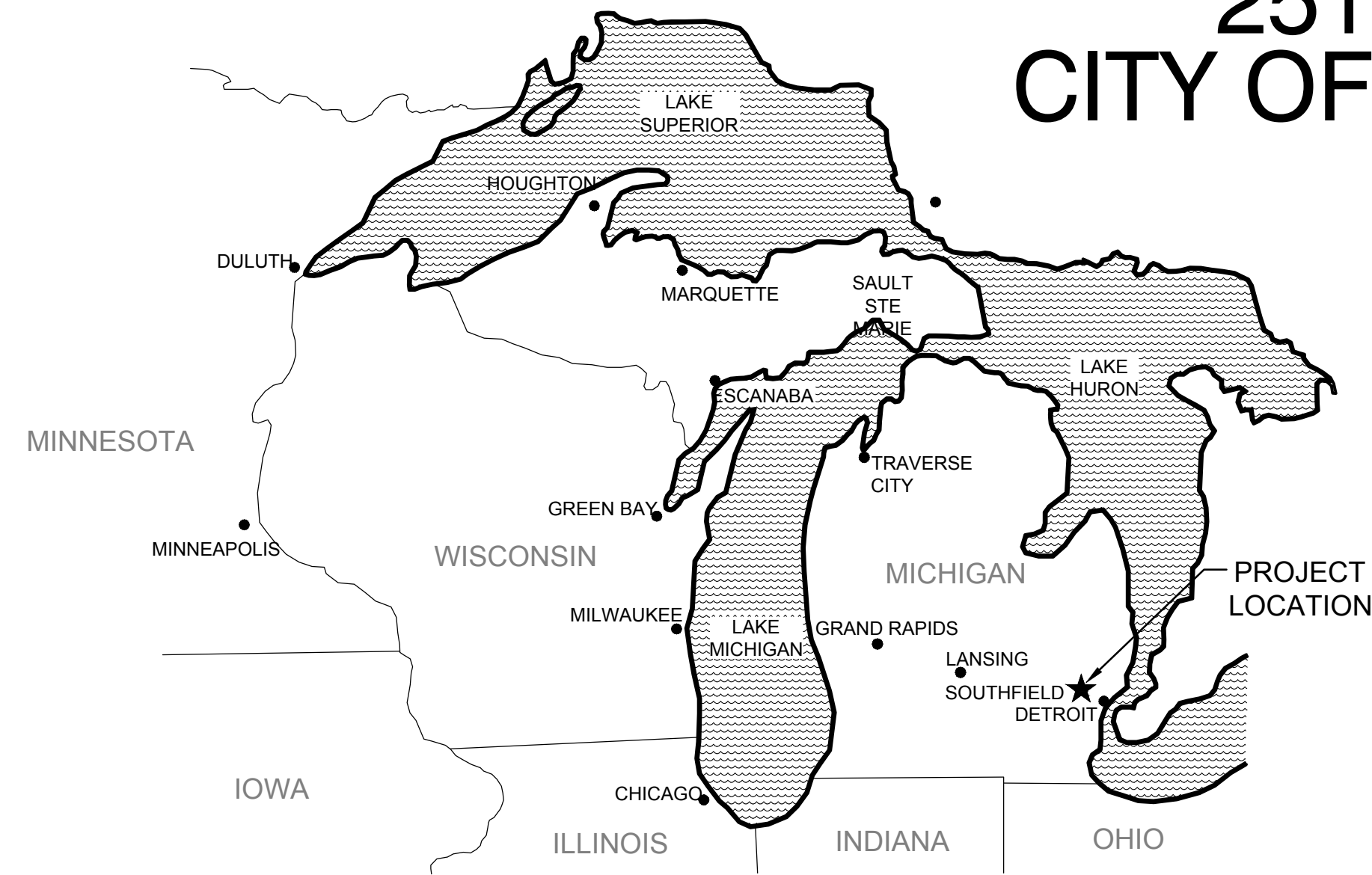


# CITY OF SOUTHFIELD

## SOUTHFIELD FIRE STATION 4 & 5 PAVING IMPROVEMENTS

25120 W. 12 MILE RD & 24477 LAHSER ROAD  
CITY OF SOUTHFIELD, OAKLAND COUNTY, MICHIGAN



Characteristic	Existing Conditions	Proposed Conditions
Total Development Area (ac)	2.55	1.05
Impervious Area (ac)	1.49	1.03
Total Pervious Area (ac)	1.06	0.02
<b>Pervious Area Breakdown by Cover Type</b>		
Meadow/fallow/natural areas (non-cultivated)	0.00	0.00
Predominant NRCS Soil Type (A, B, C, or D)	Type D	Type D
Improved Areas (turf grass, landscape, row crops)	1.00	0.02
Predominant NRCS Soil Type (A, B, C, or D)	Type D	Type D
Wooded Areas	0.00	0.00
Predominant NRCS Soil Type (A, B, C or D)	Type D	Type D
CPVC Volume Calculated (cubic feet)		4,658
CPVC Volume Provided (cubic feet)		0
CPVC Volume Provided (cubic feet)		9,225

The Professional Engineer who signs and seals this site plan certifies that the values in this table reflect the WRC stormwater calculations required for this development and that geotechnical investigations were performed that provide conclusive documentation that demonstrates whether infiltration (i.e., CPVC Volume Control) is practicable.



UTILITY PROVIDERS

**SANITARY/WATER**  
CITY OF SOUTHFIELD  
25501 CLARA LANE  
SOUTHFIELD, MI 48034  
PHONE: 248-821-5132  
EMAIL: COSMISSDIG@CITYOFSOUTHFIELD.COM  
CONTACT: HENRY GORDON

**NATURAL GAS**  
CONSUMERS ENERGY  
530 W WILLOW ST  
LANSING, MI 48906  
PHONE: 517-374-2002  
EMAIL: MISSDIGDESIGNTICKETS@CMSENERGY.COM  
CONTACT KURT GOLDING

**ELECTRICITY**  
DETROIT EDISON  
ONE ENERGY PLAZA, 518 SB  
DETROIT, MI 48226  
PHONE: 313-235-5632  
EMAIL: DESIGN\_MISSDIG@DTEENERGY.COM

**TELEPHONE**  
ATT  
54 N. MILL ST, 4TH FLOOR  
PONTIAC, MI 48342  
EMAIL: LD2154@ATT.COM  
CONTACT: HEATHER VALLE-KNOBLAUCH

**CABLE**  
COMCAST  
25626 TELEGRAPH  
SOUTHFIELD, MI 48034  
PHONE: 248-809-2715  
EMAIL: CRAIG\_PUDAS@CABLE.COMCAST.COM  
CONTACT: CRAIG PUDAS

**WIDE OPEN WEST**  
32650 N. AVIS RD  
MADISON HEIGHTS, MI 48071  
PHONE: 734-237-4319  
EMAIL: JOHN.HAJEC@WOWINC.COM  
CONTACT: JOHN HAJEC

**FIBER LINK/CROWN CASTLE**  
15000 CORPORATE DRIVE  
CANNONSBURG, PA 15317  
PHONE: 800-654-3110 EXT:2  
EMAIL: FIBER.DIG@CROWNCastle.COM  
CONTACT: FIBER DIG TEAM

**EVERSTREAM**  
3950 SPARKS DR SE  
GRAND RAPIDS, MI 49546  
PHONE: 616-608-8945  
EMAIL: BKUNTER@EVERSTREAM.NET  
CONTACT: BRIAN KUNTER

**METRO FIBERNET LLC**  
PHONE: 812-213-1378  
CONTACT: KORIE NELLIS

**MANAGEDWAY COMPANY**  
319 EXECUTIVE DR.  
TROY, MI 48063  
PHONE: 888-745-6948 EXT: 216  
EMAIL: LOCATE@MANAGEDWAY.COM  
CONTACT: CHRISTOPHER ECKLESDAFER

**SPECTRUM BROADBAND, LLC**  
2722 E MICHIGAN AVE  
LANSING, MI 48912  
PHONE: 616-821-7705  
EMAIL: MISSDIG@GOLIGHTSPEED.COM  
CONTACT: ERIC ESSENBERG

**WINDSTREAM COMMUNICATIONS**  
1450 N CENTER POINT RD  
HIAWATHA, IA 52233  
PHONE: 800-289-1901  
EMAIL: LOCATE.DESK@WINDSTREAM.COM  
CONTACT: LOCATE DESK

**U.S. SIGNAL CORP.**  
7020 SOUTHBELT DR SE  
CALEDONIA, MI 49316  
PHONE: 616-455-9840  
EMAIL: LOCATEMAPS@TKNS.NET  
CONTACT: ERICA BENNETT

**TELNET WORLDWIDE, INC.**  
PO BOX 252  
ZEELAND, MI 49464  
PHONE: 616-455-9840  
EMAIL: LOCATEMAPS@TKNS.NET  
CONTACT: ERICA BENNETT

**LEVEL 3 NOW CENTRUYLINK**  
1025 ELDORADO BLVD  
BROOMFIELD, CO 80021  
PHONE: 877-366-8344 EXT:3  
EMAIL: RYAN.EGAN@CENTRUYLINK.COM  
CONTACT: RYAN EGAN

**SOUTHFIELD PUBLIC SCHOOLS**  
PHONE: 616-455-9840  
EMAIL: LOCATEMAPS@TKNS.NET  
CONTACT: ERICA BENNETT

**MCI/VERIZON BUSINESS**  
PHONE: 972-729-6016  
EMAIL: INVESTIGATIONS@VERIZON.COM  
CONTACT: OSP/INVESTIGATIONS

**OWNER:** SOUTHFIELD FIRE DEPARTMENT  
CONTACT: RONALD BALLERINI  
24477 LAHSER ROAD  
SOUTHFIELD, MI 48033  
248-796-5607

**DEVELOPER:** SOUTHFIELD FIRE DEPARTMENT  
CONTACT: RONALD BALLERINI  
24477 LAHSER ROAD  
SOUTHFIELD, MI 48033  
248-796-5607

**ENGINEER:** OHM ADVISORS, INC.  
CONTACT: ZACHARY HAMPTON, P.E.  
1145 GRISWOLD STREET, SUITE 200  
DETROIT, MICHIGAN 48226  
313-481-1253  
ZACHARY.HAMPTON@OHM-ADVISORS.COM

**PLANS FOR BIDDING**  
**OHM PROJECT NO. 0153-23-0180**  
**DATE/ISSUE: 4/2/24**

I Certify That The Electrical Plans Were Prepared Under My Direct Supervision	I Certify That The Site Plans Were Prepared Under My Direct Supervision
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DRAWING PATH: P:\0126 0153\23\0180\_Fire Stations\_4 & 5\_Part1.mxd; Date: 4/2/24; 3:38pm

SHEET	SHEET TITLE	DATE	DESCRIPTION	ISSUE	
				3/7/24	4/2/24
C-001	LEGEND				
C-002	NOTES				
C-003 - C-004	TOPOGRAPHIC SURVEY				
C-120 - C-121	REMOVAL PLAN				
C-130 - C-131	SITE PLAN				
C-140 - C-141	GRADING PLAN				
C-150 - C-151	UTILITY PLAN				
C-152	STORMWATER MANAGEMENT CALCULATIONS				
C-153	STORM SEWER PROFILES				
C-160	STAGIN PLAN				
C-501 - C-502	STANDARD DETAILS				
C-503	STANDARD STORM DETAILS				
C-504 - C-509	UNDERGROUND DETENTION DETAILS				
C-510	OCWRC STORM STANDARD DETAILS				
C-511	OCWRC SOIL EROSION CONTROL STANDARD DETAILS				
E-001	ELECTRICAL NOTES AND SYMBOLS				
ED101	ELECTRICAL DEMOLITION SITE PLAN				
E-101	ELECTRICAL POWER SITE PLAN				
E-501	ELECTRICAL DETAILS				
E-601	ELECTRICAL SCHEDULES				

**SHEET INDEX**

REVISION KEY  
● NEW SHEET ○ NOT REVISED ▲ REVISED

**WATER & SEWER UTILITY SYMBOLS**

- EXISTING**
- ST STORM MANHOLE
  - SQUARE CATCH BASIN
  - ⊕ ROUND CATCH BASIN
  - == CULVERT
  - ⊕ CULVERT W/O END SECTION
  - ) CULVERT W/END SECTION
  - S SANITARY MANHOLE
  - ⊙ CLEAN OUT
  - ⊗ GW GATE VALVE & WELL
  - ⊕ GATE VALVE & BOX
  - ⊕ W WATER STOP BOX
  - ⊕ FIRE HYDRANT
  - ⊕ MP METER PIT
  - ⊕ WATER METER
  - ⊕ SH SPRINKLER HEAD
  - ⊕ IRRIGATION VALVE

- PROPOSED**
- STORM MANHOLE
  - INLET/CATCH BASIN
  - ⊕ CULVERT W/O END SECTION
  - ) CULVERT END SECTION
  - SANITARY MANHOLE
  - ⊗ GV&W GATE VALVE & WELL
  - ⊕ GV&B GATE VALVE & BOX
  - ⊕ TSV&W TAPPING SLEEVE VALVE & WELL
  - ⊕ TSV&B TAPPING SLEEVE VALVE & BOX
  - ⊕ FIRE HYDRANT

**REAL ESTATE SYMBOLS**

- ↔ CONTIGUOUS PROPERTY SYMBOL
- ⊗ PARCEL NUMBER BOX
- ⊗ NO ROW IMPACTS

**MISCELLANEOUS UTILITY SYMBOLS**

- EXISTING**
- ↖ GUY WIRE
  - ⊕ GP GUY POLE
  - ⊕ U UTILITY POLE
  - ⊕ TU UTILITY POLE W/LIGHT
  - ⊕ LIGHT/DECOR LAMP POLE
  - ⊕ FLOOD LIGHT
  - ⊕ GAS VALVE
  - ⊕ GAS VENT
  - ⊕ G GAS METER
  - ⊕ GAS RISER
  - ⊕ TRAFFIC SIGNAL
  - ⊕ PEDESTRIAN RISER
  - ⊕ TRANSFORMER PAD
  - ⊕ U PRIVATE UTILITY MANHOLE
  - ⊕ R RAILROAD CROSSING
  - ⊕ E ELECTRIC METER
  - ⊕ PB PHONE BOOTH
  - ⊕ TS TRAFFIC SIGNAL CONTROLLER
  - ⊕ HAND HOLE
  - ⊕ E ELECTRIC RISER
  - ⊕ T TELEPHONE RISER
  - ⊕ C CABLE TV RISER
  - ⊕ W MONITORING WELL
  - ⊕ UNDERGROUND MARKER

**MISCELLANEOUS SYMBOLS**

- EXISTING**
- ⊕ RIPRAP
  - ⊕ SIGN
  - FLOW DIRECTION
  - ⊕ STUMP
  - ⊕ WETLAND
  - ⊕ CONIFEROUS TREE } CL 1 1" TO 5"
  - ⊕ DECIDUOUS TREE } CL 2 6" TO 17"
  - ⊕ CONIFEROUS SHRUB } CL 3 18" TO 35"
  - ⊕ DECIDUOUS SHRUB } CL 4 36" AND UP
  - ⊕ SB# SOIL BORING
  - ⊕ SECTION CORNER
  - ⊕ MON MONUMENT
  - ⊕ IRON ROD/PIPE
  - ⊕ PK PK NAIL
  - ⊕ BM# BENCHMARK
  - ⊕ TP# TRAVERSE POINT
  - ⊕ MAIL/NEWSPAPER BOX
  - ⊕ FLAG POLE
  - ⊕ POST

**HAZARDOUS OR FLAMMABLE MATERIAL** USED WITH UNDERGROUND GAS & ELECTRICAL LINES

**CAUTION - CRITICAL UNDERGROUND UTILITY** USED WITH TELEPHONE & FIBER OPTIC LINES

- PROPOSED**
- ⊕ RIPRAP
  - ⊕ SIGN
  - FLOW DIRECTION
  - ⊕ STRUCTURE NUMBER } WM SAN STM
  - ⊕ ADA SIDEWALK RAMP

**UTILITY PATTERN**

- EXISTING**
- ELEC --- ELECTRICAL \*
  - 6" (COMPANY) GAS --- GAS/OIL
  - (COMPANY) CABLE/TEL --- CABLE/TELEPHONE \*
  - FIBER OPTIC --- FIBER OPTIC \*
  - 12" WM --- WATER
  - 12" SAN --- SANITARY
  - 12" STM --- STORM
- PROPOSED**
- 12" --- STORM/SANITARY/WATER
- PRIMARY UTILITY WILL HAVE A CONTINUOUS LIFESTYLE, WITH THE SECONDARY UTILITY MATCHING ITS RESPECTIVE EXISTING UTILITY LIFESTYLE
- \*O.H. = OVERHEAD , U.G. = UNDERGROUND

**ROW PATTERN**

- EXISTING**
- ROW --- ROW
  - SECTION --- SECTION
  - PROPERTY/PARCEL --- PROPERTY/PARCEL
- PROPOSED**
- ROW --- ROW

**TOPO PATTERN**

- EXISTING**
- HEDGE/TREE --- HEDGE/TREE
  - FENCE --- FENCE
  - GUARDRAIL --- GUARDRAIL
  - CENTERLINE OF DITCH --- CENTERLINE OF DITCH
  - RAILROAD --- RAILROAD
  - WETLAND/EDGE OF WATER --- WETLAND/EDGE OF WATER
- PROPOSED**
- GRADING LIMIT (SLOPE STAKE) --- GRADING LIMIT (SLOPE STAKE)
  - CENTERLINE OF DITCH --- CENTERLINE OF DITCH
  - GUARDRAIL --- GUARDRAIL
  - FENCE --- FENCE

**REMOVAL LEGEND**

- ▨ SIDEWALK REMOVAL
- ▨ HMA SURFACE REMOVAL
- ▨ PAVEMENT REMOVAL
- ▨ COLD MILLING HMA SURFACE
- ▨ HMA BASE CRUSHING AND SHAPING
- ▨ EXCAVATION, EARTH, MODIFIED
- ⊗ CURB AND GUTTER, REM
- ⊗ TREE, REM
- S-XXXXXX SALVAGE
- B-XXXXXX BULKHEAD
- A-XXXXXX ABANDON
- R-XXXXXX REMOVE
- ADJ-XXXXXX ADJUST
- REL-XXXXXX RELOCATE
- REC-XXXXXX RECONSTRUCT
- R B/O-XXXXXX REMOVE BY OTHERS
- ADJ B/O-XXXXXX ADJUST BY OTHERS
- REL B/O-XXXXXX RELOCATE BY OTHERS

**IF NECESSARY FOR CLARITY**

- ⊕ SALVAGE
- ⊕ BULKHEAD
- ⊕ ABANDON
- ⊕ CLEARING
- ⊕ REMOVE
- ⊕ REL RELOCATE
- ⊕ REC RECONSTRUCT
- ⊕ REL B/O RELOCATE BY OTHERS
- ⊕ ADJ B/O ADJUST BY OTHERS

**SPECIAL LEGEND**

- ▨ PROPOSED CONCRETE PAVEMENT
- ▨ PROPOSED BITUMINOUS PAVEMENT



ISSUED FOR: PLANS FOR BIDDING  
REVISION DESCRIPTION

4/2/24  
DATE

CITY OF SOUTHFIELD  
SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
OAKLAND COUNTY  
LEGEND

C-001



**AUTHORITIES/PERMITTING**

- THE CONTRACT DOCUMENTS, WHICH INCLUDE BUT ARE NOT LIMITED TO THE PLAN NOTES, SPECIFICATIONS, CONTRACT TERMS AND CONDITIONS, AND SUPPLEMENTAL CONDITIONS, LIST VARIOUS FIRMS AND AGENCIES HAVING VARYING LEVELS OF AUTHORITY OVER THE WORK. THE FOLLOWING ASSOCIATIONS OF AUTHORITY SHALL BE CONSIDERED PART OF THE CONTRACT AND SHALL BE HONORED BY THE CONTRACTOR UNLESS ALTERED IN WRITING BY THE OWNER.
  - CONTRACTOR = TO BE DETERMINED (REQUIREMENTS OF CONTRACTOR SHALL EQUALLY APPLY TO ANY VENDOR, SUBCONTRACTOR, OR SERVICE PROVIDER RETAINED BY THE CONTRACTOR)
  - SURVEYOR = SHALL BE RETAINED BY THE CONTRACTOR FOR STAKING, MEASUREMENT, AND AS-BUILT RECORD AT NO ADDITIONAL EXPENSE TO THE OWNER.
  - OWNER = CITY OF SOUTHFIELD (CONTACT: RONALD BALLERINI – (248) 796-5607)
  - OWNER'S REPRESENTATIVE = ANY DELEGATE FROM ENGINEER, OWNER, OR TESTING AGENCY. OWNER MAY DESIGNATE OR CHANGE SPECIFIC REPRESENTATIVES FOR EACH PROJECT REQUIREMENT AT ANY TIME.
  - ENGINEER = OHM ADVISORS (CONTACT: ZACHARY HAMPTON, PE – (313) 481-1253)
  - TESTING AGENCY = DESIGNATED AND RETAINED BY THE OWNER
  - UTILITY AUTHORITIES = SEE COVER SHEET
  - RIGHT-OF-WAY = NOT APPLICABLE – CONTRACTOR SHALL PERFORM ALL WORK AND STAGING WITHIN THE PROPERTY LIMITS OF THE CITY OF SOUTHFIELD
  - CONSTRUCTION/BUILDING PERMITTING = CITY OF SOUTHFIELD BUILDING DEPARTMENT
  - TRAFFIC CONTROL REGULATION = MICHIGAN MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD)
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN THE NECESSARY FEDERAL, STATE, AND LOCAL PERMITS FOR THE PROPOSED WORK AT NO ADDITIONAL COST TO THE OWNER.

**GENERAL CONSTRUCTION NOTES/TRAFFIC CONTROL**

- CONTRACTOR SHALL PROVIDE ALL MATERIALS, PERSONNEL, AND EQUIPMENT NECESSARY TO COMPLY WITH ALL NOTES AND REQUIREMENTS CONTAINED WITHIN THE CONTRACT DOCUMENTS, INCLUDING THE PLAN DRAWING AND DETAILS, AT NO ADDITIONAL COST TO THE OWNER. COMPLIANCE WITH THE PROJECT REQUIREMENTS CONTAINED HEREIN SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND THE RESPECTIVE LUMP SUM OR UNIT PRICE COST(S).
- CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF BURIED UTILITIES AND TOPOGRAPHIC FEATURES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES ON THE PLANS ON THE SAME DAY THEY ARE DISCOVERED.
- DO NOT SCALE DRAWINGS. ANY DIMENSIONAL INFORMATION REQUIRED WHICH IS NOT INDICATED ON DRAWING DIMENSION STRINGS SHALL BE OBTAINED FROM THE ENGINEER.
- MATERIALS, METHODOLOGIES, PROCEDURES THAT REFER TO 'MDOT SHALL CONFORM TO MICHIGAN DEPARTMENT OF TRANSPORTATION 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND APPLICABLE SPECIAL PROVISIONS. REFERENCES TO PAYMENT WITHIN THE REFERENCED MDOT DOCUMENTS SHALL NOT APPLY TO THIS CONTRACT; ALL PAYMENT SHALL BE IN ACCORDANCE WITH THE METHOD OF PAYMENT AS DESCRIBED IN THE CONTRACT DOCUMENTS AND/OR OWNER'S PURCHASE ORDER LANGUAGE.
- CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE A MINIMUM OF 48 HOURS PRIOR TO PERFORMING ACTIVITIES THAT WILL OR MAY REQUIRE ACCEPTANCE, INSPECTION, OR ANY TESTING DESCRIBED HEREIN.
- THE CONTRACTOR SHALL RESTRICT CONSTRUCTION ACTIVITIES TO THE SITE BOUNDARIES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE OR DISTURBANCE TO THE ADJACENT PROPERTIES OR RIGHT-OF-WAY OCCURRING DURING THIS CONTRACT, AT NO COST TO THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL DEVICES SUCH AS CONES, BARRICADES, SIGNS, FLAGGERS, FENCES, AND LIGHTS TO CONTROL THE MOVEMENT OF TRAFFIC WHERE NECESSARY CONFORMING TO LOCAL TRAFFIC CONTROL STANDARDS. TRAFFIC AND PEDESTRIAN CONTROLS SHALL PROHIBIT TRAFFIC OVER NEW PAVEMENT, LANDSCAPING, RESTORATION, PAINT, OR ANY OTHER NEWLY INSTALLED FEATURE UNTIL THE OWNER'S REPRESENTATIVE AUTHORIZES OPENING TO TRAFFIC.
- THE CONTRACTOR SHALL PREPARE AND SUBMIT A TRAFFIC CONTROL PLAN FOR ANY WORK ADJACENT TO OR WITHIN THE PUBLIC RIGHT-OF-WAY.
- CONTRACTOR SHALL MAINTAIN AN ACCESSIBLE ROUTE FOR PEDESTRIANS AND EMERGENCY VEHICLES AND PERSONNEL TO ADJACENT BUILDINGS AT ALL TIMES.
- SAFETY NOTICE: CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK; THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. ON-SITE REVIEW OF THE CONTRACTOR'S PERFORMANCE DOES NOT ALLEVIATE THE CONTRACTOR'S SAFETY REQUIREMENTS. SITE SECURITY IS THE CONTRACTOR'S RESPONSIBILITY.
- EQUIPMENT, SOIL STOCKPILES, JOB TRAILERS, VEHICLES, AND OTHER MATERIALS SHALL ONLY BE STORED IN AN OWNER-APPROVED AREA THAT PREVENTS ENVIRONMENTAL DAMAGE, IS DEVOID OF MATURE TREES, AND IS ISOLATED FROM DRAINAGE FACILITIES, WETLANDS, STREAMS, AND TRAFFIC PATTERNS.
- CONTRACTOR SHALL UNLOAD MATERIAL IN A SAFE AND CAREFUL MANNER WHICH PREVENTS DAMAGE TO THE MATERIAL AND EXISTING SITE FEATURES. DROPPING PIPE, STRUCTURES, FITTINGS, CASTINGS, OR OTHER BRITTLE OR FRAGILE MATERIAL OFF OF TRUCKS IS PROHIBITED.
- TREE PROTECTION: UNLESS OTHERWISE DIRECTED, ALL TREES SHALL BE PROTECTED. THE FOLLOWING MEASURES SHALL BE IMPLEMENTED FOR TREE PROTECTION
  - THE TREES SHALL BE PROTECTED FROM WOUNDS TO THE BARK AND FOLIAGE.
  - THE CRITICAL ROOT ZONE (1.5 FEET RADIUS FOR EACH INCH OF DIAMETER AT BREAST HEIGHT) SHALL BE PROTECTED FROM COMPACTION AND GRADING.
  - CHANGES IN TEMPORARY SITE DRAINAGE AND PONDING THAT AFFECT THE PROTECTED TREES IS PROHIBITED.
  - THE CRITICAL ROOT ZONE SHALL BE SURROUNDED BY A HIGH-VISIBILITY FENCE (4 FT IN HEIGHT).
  - ANY EXISTING TREE THAT IS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED AT THE EXPENSE OF THE CONTRACTOR. TREE WILL BE CONSIDERED DAMAGED IF THE CRITICAL ROOT ZONE IN COHESIVE SOILS IS COMPACTED OR IF THERE ARE SIGNIFICANT WOUNDS THAT COULD CONTRIBUTE TO ROT OR DISTRESS.
- ALL DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL BE RESTRICTED TO NORMAL DAYLIGHT WORKING HOURS MONDAY THROUGH SATURDAY UNLESS OTHERWISE APPROVED BY THE OWNER'S REPRESENTATIVE.

**DEMOLITION AND CLEARING**

- SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO BEGINNING DEMOLITION WORK.
- TOPSOIL STRIPPING
  - STRIP THE FULL DEPTH OF TOPSOIL ONLY FROM THOSE AREAS THAT WILL BE DISTURBED BY EXCAVATION, FILLING, CONSTRUCTION, OR COMPACTION BY EQUIPMENT.
  - STOCKPILE TOPSOIL WITHOUT INTERMIXING WITH ANY OTHER MATERIAL – BORROW TOPSOIL TO REPLACE MATERIAL CONTAMINATED BY THE CONTRACTOR SHALL BE AT THE CONTRACTOR'S EXPENSE.
  - TEMPORARY STABILIZATION OF THE STOCKPILE(S) SHALL BE COMPLETED WITHIN SEVEN (7) DAYS OF THE FORMATION OF THE STOCKPILE, IF IT IS TO REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN THIRTY (30) DAYS.

- TEMPORARY STOCKPILES: PROTECTIVE MEASURES SHALL BE INCORPORATED BY THE CONTRACTOR TO ENSURE SAFETY AND CONTROL EROSION ASSOCIATED WITH THE TEMPORARY STOCKPILES.
- EXCAVATED MATERIALS NOT NEEDED OR NOT SUITABLE FOR FILL SHALL BE DISPOSED OFFSITE.
- DISPOSAL: ALL DEMOLITION AND REMOVED MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OFF-SITE IN ACCORDANCE TO ALL FEDERAL, STATE, AND LOCAL HAULING AND DISPOSAL REGULATIONS UNLESS DIRECTED OTHERWISE BY THE OWNER. DISPOSAL IN WETLANDS AND FLOODPLAINS IS PROHIBITED. BURNING ON-SITE IS PROHIBITED.

**EARTHWORK**

- WHEN EXCAVATED MATERIALS ARE INSUFFICIENT OR UNSUITABLE FOR USE AS FILL OR BACKFILL, BORROW MATERIAL SHALL BE IMPORTED BY THE CONTRACTOR. CONTRACTOR SHALL CALCULATE CUT AND FILL QUANTITIES AND SHALL IMPORT AND EXPORT MATERIALS AS NEEDED TO COMPLY WITH THE PROJECT PLANS, DETAILS, AND SPECIFICATIONS AT NO ADDITIONAL COST TO THE OWNER.
- THE SUBGRADE OR FILL SHALL BE PROOF-ROLLED PRIOR TO PLACING AGGREGATE BASE COURSE OR SUBBASE ATOP SUCH MATERIALS. AGGREGATE BASE COURSE LEFT IN PLACE SHALL BE PROOF ROLLED PRIOR TO PLACING PAVEMENT. ANY SOIL STRATA IS SUBJECT TO PROOF ROLL AT THE DISCRETION AND DIRECTION OF THE OWNER'S REPRESENTATIVE.
- BORROW SOIL: PRODUCT DATA, GRADATION, AND CERTIFICATION SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO PLACEMENT.
- PRIOR TO PLACING ANY SOIL MATERIAL OR PAVEMENTS, THE UNDERLYING COURSE OR SUBGRADE SHALL BE CLEANED OF ALL FOREIGN SUBSTANCES, ALL FROZEN MATERIALS REMOVED, AND THE SURFACE SHALL MEET COMPACTION AND SURFACE TOLERANCES.
- RUTS OR SOFT YIELDING SPOTS IN THE UNDERLYING COURSES, AREAS HAVING INADEQUATE COMPACTION, AND DEVIATIONS OF THE SURFACE FROM THE REQUIREMENTS SHALL BE CORRECTED BY 'SUBGRADE UNDERCUT'
- DRIED OR CRUSTED COHESIVE SOILS SHALL BE PLOWED, DISKED OR OTHERWISE BROKEN UP BEFORE COMPACTION. IF WATER IS ADDED TO FILLS, THE LAYER SHALL BE SPREAD IN EVEN LIFTS, MOISTENED AS NECESSARY, THOROUGHLY MIXED, AND COMPACTED.
- SUBGRADE UNDERCUT:
  - UNDERCUT AND REMOVE UNSATISFACTORY SOILS TO DEPTH AND HORIZONTAL EXTENTS AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
  - REPLACE THE REMOVED MATERIAL WITH FILL, GRADE AND COMPACT TO THE PLAN-INDICATED SUBGRADE ELEVATIONS IN ACCORDANCE WITH THE BACKFILL REQUIREMENTS OF THE PLAN
  - CONTRACTOR SHALL UNDERLAY FILL MATERIAL WITH A STABILIZATION GEOGRID AS DIRECTED BY THE PLANS OR OWNER'S REPRESENTATIVE
  - ALL SUBGRADE UNDERCUTS ARE SUBJECT TO ACCEPTANCE BY THE OWNER'S REPRESENTATIVE.
- PROOF ROLLING:
  - PROOF ROLL THE AREAS INDICATED, IN ADDITION TO THE COMPACTION SPECIFIED AND SHALL CONSIST OF THE APPLICATION OF COVERAGES WITH A HEAVY PNEUMATIC-TIRED ROLLER HAVING FOUR OR MORE TIRES, EACH LOADED TO A MINIMUM OF 30,000 POUNDS AND INFLATED TO A MINIMUM OF 125 PSI.
  - MAINTAIN WATER CONTENT OF THE UNDERLYING MATERIAL AND BASE COURSE AT OPTIMUM OR AT THE PERCENTAGE DIRECTED FROM START OF COMPACTION TO COMPLETION OF PROOF ROLLING OF THAT LAYER.
  - ANY BASE COURSE MATERIALS OR ANY UNDERLYING MATERIALS THAT PRODUCE UNSATISFACTORY RESULTS BY PROOF ROLLING SHALL BE REMOVED AND REPLACED WITH SATISFACTORY MATERIALS, RECOMPACTED AND PROOF ROLLED TO THE ACCEPTANCE OF THE OWNER'S REPRESENTATIVE.
- PLACEMENT OF SUBSEQUENT LAYERS OF SOIL MATERIAL SHALL NOT BE PERFORMED UNTIL THE UNDERLYING MATERIAL HAS BEEN VERIFIED AND ACCEPTED BY THE TESTING AGENCY TO HAVE MET THE CONDITION, GRADATION, WATER CONTENT, AND COMPACTION AS REQUIRED BY THE DESIGN.
- PROOF ROLLING, DEWATERING, AND SAFETY MEASURES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.

**COMPACTION/SOIL TESTING**

- FILL AND BACKFILL MATERIALS SHALL BE PLACED UNIFORMLY ON AN ACCEPTABLE SOIL SURFACE AND COMPACTED IN 8-INCH LIFTS UNLESS THE CONTRACTOR CAN DEMONSTRATE TO THE OWNER'S REPRESENTATIVE THAT ACCEPTABLE COMPACTION CAN BE ACHIEVED IN THICKER LIFTS.
- COMPACTION EQUIPMENT:
  - SHEEPSFOOT ROLLER FOR COHESIVE MATERIALS
  - VIBRATORY FOR GRANULAR MATERIALS (SAND, STONE, AND GRAVEL)
- WATER CONTENT: ±2% OF THE OPTIMUM (ASTM D 1557).
- ROLLER: WORK FROM OUTSIDE TO THE CENTER, OVERLAPPING ON SUCCESSIVE TRIPS AT LEAST ONE-HALF THE WIDTH OF THE ROLLER. ALTERNATE TRIPS OF THE ROLLER SHALL BE SLIGHTLY DIFFERENT LENGTHS.
- SPEED SHALL BE SUCH THAT DISPLACEMENT OF THE AGGREGATE DOES NOT OCCUR. IN ALL PLACES NOT ACCESSIBLE TO THE ROLLERS, THE MIXTURE SHALL BE COMPACTED WITH HAND-OPERATED POWER TAMPERS OR EXCAVATOR MOUNTED VIBRATORY COMPACTOR (I.E. HOE-PACK).
- COMPACTION SHALL BE MEASURED RELATIVE TO THE MAXIMUM DRY DENSITY PER ASTM D 1557 (MODIFIED PROCTOR METHOD).
- MINIMUM COMPACTION:
 

A. TOPSOIL	85%
B. GREENSPACE FILL	90%
C. UNDER PAVEMENT	95%
D. UTILITY TRENCH BACKFILL	95%
E. BERMS/POND SLOPES	95%
- FILL AND BACKFILL WITHIN A 1:1 ENVELOPE OF THE EDGE OF PAVEMENT OR BACK OF CURB SHALL BE TREATED AS 'UNDER PAVEMENT'
- TESTING:
  - TESTING AGENCY: SEE 'AUTHORITIES' – HAS AUTHORITY TO STOP OR REJECT WORK FOR QUALITY ON

**GENERAL PROVISIONS**

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE PROPOSAL AND ACCOMPANYING SPECIFICATIONS FOR THIS PROJECT INCLUDING THE 2020 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2011 MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AND THE MICHIGAN DEPARTMENT OF TRANSPORTATION LOCAL AGENCY PROGRAMS GUIDELINES FOR GEOMETRICS DATED 8-28-08.

THE LOCATION OF ALL PUBLIC UTILITIES SHOWN ON THESE PLANS IS TAKEN FROM THE BEST AVAILABLE DATA. THE CITY OF AUBURN HILLS WILL NOT BE RESPONSIBLE FOR ANY OMISSION OR VARIATION FROM THE LOCATIONS SHOWN. PURSUANT TO ACTS 173 & 174 OF THE P.A. OF 2013, AS A CONDITION OF THIS CONTRACT, NOTICE SHALL BE GIVEN TO MISS DIG PRIOR TO UNDERGROUND WORK TO BE PERFORMED IN ACCORDANCE WITH THIS CONTRACT, PHONE (800) 482-7171 (OR 811). UTILITY SERVICE CONNECTIONS ARE NOT SHOWN ON THE PLANS AND ARE NOT THE RESPONSIBILITY OF THE CITY OF AUBURN HILLS.

- BEHALF OF THE OWNER
- MOISTURE-DENSITY RELATIONSHIP (ASTM D 1557 – MODIFIED PROCTOR): ONE TEST FOR EACH MATERIAL VARIATION AND BORROW SOURCE.
  - SIEVE ANALYSIS, (ASTM C 136): 1 PER MATERIAL FOR EACH BORROW SOURCE, EACH RECLAIMED ON-SITE MATERIAL, AND FOR EACH VARIATION IN MATERIAL.
  - IN-PLACE DENSITIES (ASTM D1556 – SAND CONE OR ASTM D6938 – NUCLEAR GAUGE):
    - GENERAL: 1 PER LOCATION
    - UNDER SIDEWALKS: 1 PER 100 SQUARE FEET
    - UNDER OTHER PAVEMENT: 1 PER 500 SQUARE FEET
    - UTILITY TRENCHES: 1 PER 100 FEET OF PIPE

**EXCAVATION, TRENCHING, AND BACKFILL**

- ONE-CALL UTILITY LOCATING: MISSDIG – 811 OR 800-482-7171. CONTRACTOR SHALL CALL AND OPEN AN EXCAVATION TICKET A MINIMUM OF 3 WORKING DAYS PRIOR TO ANY EXCAVATION. WHEN MARKINGS AND FLAGS ARE DISRUPTED OR DESTROYED – CALL FOR REMARKING.
- SURVEYOR SHALL PROVIDE STAKING FOR GRADING, FILL THICKNESS, CUT AND FILL LIMITS, AND ANY OTHER FIELD CONTROL NEEDED TO COMPLETE THE WORK IN STRICT ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- EXCAVATED MATERIALS SHALL BE PLACED ON THE UPHILL SIDES OF TRENCHES, WHERE POSSIBLE, AND SHALL BE SET BACK 10 FEET FROM THE TRENCH.
- CONTAMINATED SOILS ARE NOT ANTICIPATED TO BE ENCOUNTERED. IF CONTAMINATED SOILS ARE EXCAVATED, THEY SHALL BE ISOLATED FROM OTHER MATERIALS, PROTECTED FROM SPREADING CONTAMINANTS INTO STORM SEWERS AND WATERWAYS, AND SHALL BE DISPOSED OF ACCORDING TO LOCAL AND STATE REGULATIONS.
- SALVAGE EXCAVATED MATERIALS AS NEEDED FOR USE AS FILL OR BACKFILL. SEGREGATE SALVAGED MATERIALS AND PREVENT CONTAMINATION. BORROW SOILS NEEDED TO REPLACE REJECTED MATERIALS SHALL BE AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A SAFE EXCAVATION AT ALL TIMES. USE SHORING, TRENCH BOXES, SLOPING, BENCHING, DEWATERING AS NEEDED TO ENSURE THE SAFETY OF WORKERS, INSPECTORS, TESTERS, AND OBSERVERS. UNATTENDED EXCAVATIONS SHALL BE BARRICADED AND/OR FENCED TO PREVENT ACCIDENTS – CONTRACTOR IS RESPONSIBLE FOR PUBLIC SAFETY ANY EXCAVATIONS THEY CREATE.
- TRENCH BACKFILL:
  - EXCAVATED BACKFILL: DRY, STABLE, EXCAVATED MATERIAL SHALL ONLY PERMITTED AS BACKFILL UNDER NON-PAVED AREAS, UNLESS THE OWNER'S REPRESENTATIVE DETERMINES IT MEETS THE REQUIREMENTS 'GRANULAR BACKFILL.'
  - GRANULAR BACKFILL: SAND OR GRAVEL MEETING THE GRADATION SPECIFIED IN THE PLANS OR AS DETERMINED BY THE ENGINEER.
  - STONE BEDDING AND INITIAL BEDDING: STONE OR GRANULAR MATERIAL MEETING THE GRADATION SPECIFIED IN THE PLANS
  - PLACE TRENCH BACKFILL AT OPTIMAL DENSITY TO ALLOW FOR MINIMUM COMPACTION. WET OR SLOPPY BACKFILL SHALL NOT BE PERMITTED.
  - TRENCH OR EXCAVATE TO ALLOW FOR PROPER PIPE LINE AND GRADE, UTILITY STRUCTURE INSTALLATION, BRACING AND SHORING (IF NEEDED), AND TO ALLOW FOR THE PROPOSED PAVEMENT OR RESTORATION CROSS-SECTION PER THE PLANS. EXCESS EXCAVATION, NOT DIRECTED BY THE OWNER'S REPRESENTATIVE AND NOT NEEDED TO INSTALL UTILITIES OR SITE IMPROVEMENTS SHALL BE BACKFILLED WITH COMPACTED GRANULAR MATERIALS AT THE CONTRACTOR'S EXPENSE.
  - SOFT OR WET SUBGRADE SHALL BE CORRECTED BY 'SUBGRADE UNDERCUT'
  - PLACE AND COMPACT FILL MATERIALS IN ACCORDANCE WITH 'COMPACTION / SOIL TESTING'

**GRADING AND RESTORATION**

- SUBMIT RESTORATION PROCEDURE, SEEDS, FERTILIZERS, AND/OR PLANTS TO THE ENGINEER FOR APPROVAL PRIOR TO EXECUTING THE WORK.
- ALL DISTURBED UNPAVED LAWN AREAS ARE TO RECEIVE FOUR INCHES OF TOPSOIL, THE CONTRACTOR MAY USE SOD, SEED AND MULCH, OR HYDROSEED, UNLESS OTHERWISE NOTED. THESE AREAS SHALL BE WATERED BY THE CONTRACTOR UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
- TOPSOIL PLACEMENT:
- BEFORE SPREADING THE TOPSOIL, ASSURE THAT ALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES ARE IN PLACE AND FUNCTIONING PROPERLY. THESE PRACTICES MUST BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED.
- GRADING – MAINTAIN GRADES ON THE AREAS TO BE TOPSOILED ACCORDING TO THE APPROVED PLAN AND DO NOT ALTER THEM BY ADDING TOPSOIL.
- IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, LOOSEN OR SCARIFY THE SUBGRADE TO A DEPTH OF AT LEAST 6 INCHES.
- TOPSOIL SHALL NOT BE SPREAD WHILE IT IS FROZEN OR MUDDY OR WHEN THE SUBSOIL IS FROZEN OR MUDDY.
- COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT AVOID EXCESSIVE COMPACTION, AS IT INCREASES RUNOFF AND INHIBITS SEED GERMINATION AND SEEDLING GROWTH.
- ALL DISTURBED RETENTION AREAS ARE TO BE SEEDED AND MULCHED USING AN APPROVED SEED MIX.
- ALL PROPOSED SLOPES ARE TO BE GRADED TO 4H:1V OR FLATTER, UNLESS OTHERWISE INDICATED ON SHEETS.
- SPOT ELEVATIONS SHOWN INDICATE FINISHED PAVEMENT ELEVATIONS UNLESS OTHERWISE NOTED. ELEVATIONS SHOWN AT STRUCTURES ARE TO FINISH GRADE UNLESS OTHERWISE INDICATED.
- FINISHED GRADING SHALL BE COMPLETED ACCORDING TO THE GRADING PLAN CONTOURS AND SPOT GRADES. THE CONTRACTOR SHALL UNIFORMLY GRADE AREAS WITHIN LIMITS OF GRADING, INCLUDING ADJACENT TRANSITION AREAS. PROVIDE A SMOOTH FINISHED SURFACE WITHIN SPECIFIED TOLERANCES, WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS, WHERE ELEVATIONS ARE SHOWN, OR BETWEEN SUCH POINTS, AND EXISTING GRADES. AREAS THAT HAVE BEEN FINISH GRADED SHALL BE PROTECTED FROM SUBSEQUENT CONSTRUCTION OPERATIONS.
- AFTER THE SITE GRADING IS COMPLETED, IF EXCESS SOIL MATERIAL OR DEMOLITION DEBRIS EXISTS, THE CONTRACTOR SHALL DISPOSE OF ALL EXCESS SOIL AND DEBRIS MATERIAL IN A MANNER ACCEPTABLE TO THE OWNER AND THE REGULATING AGENCIES INVOLVED.
- DISTURBED AREAS SHALL BE SLOPED AND GRADED TO RESTORE ORIGINAL DRAINAGE PATTERNS, OR PROVIDE POSITIVE DRAINAGE WHERE NEEDED.
- RESTORATION OF NON-PAVED AREAS SHALL BE WITH SALVAGED OR IMPORTED TOPSOIL AND PLANTED IN ACCORDANCE WITH THE LANDSCAPE PLANS OR SEEDED AND MULCHED. SEEDED SLOPES GREATER THAN 1V:6H SHALL BE STABILIZED WITH SEED AND STAKED MULCH BLANKETS.
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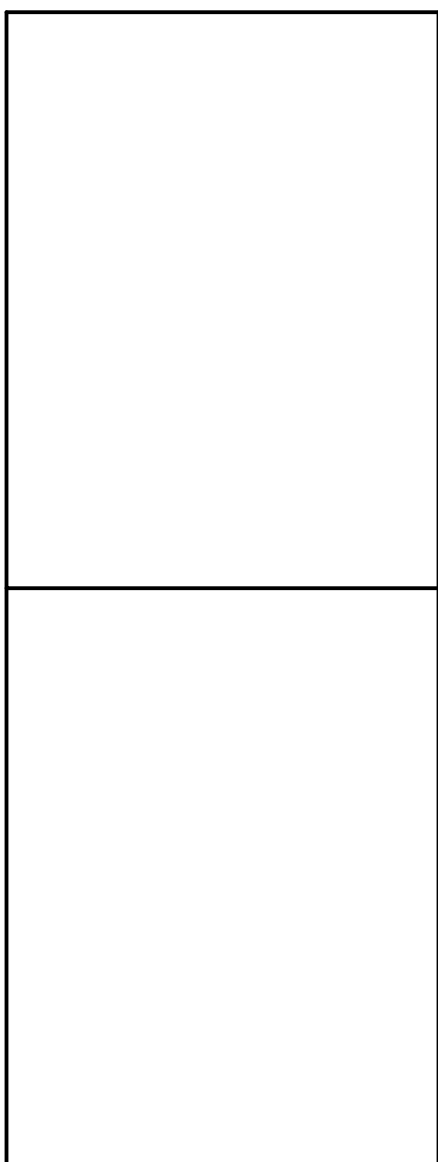
**UTILITIES**

- UTILITY CONTACTS – PRIVATE:
  - ELECTRIC – DTE ENERGY
  - GAS – CONSUMERS ENERGY
  - CABLE – COMCAST
  - PHONE – AT&T
- UTILITY AUTHORITIES – PUBLIC:
  - WATER/SEWER – SOUTHFIELD DEPARTMENT OF PUBLIC WORKS 248-796-4860
  - STORM SEWER – SOUTHFIELD DEPARTMENT OF PUBLIC WORKS 248-796-4860
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATIONS AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND LIMITED MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION SHALL NOT BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY THE OWNER'S REPRESENTATIVE OF DISCREPANCIES IN THE PLANS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS UNLESS OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE OWNER'S REPRESENTATIVE. THE ENGINEER, ARCHITECT, AND OWNER ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE LOCATION OR DEPTH OF ANY EXISTING UTILITY SHOWN OR NOT SHOWN ON THE PROJECT DRAWINGS.
- ALL UTILITY INSTALLATIONS AND MATERIALS SHALL BE IN ACCORDANCE WITH THE JURISDICTION'S STANDARD DETAILS, SPECIFICATIONS, AND REQUIREMENTS, WHERE APPLICABLE.
- CONTRACTOR SHALL NOT OPERATE, INTERFERE WITH, CONNECT ANY PIPE OR HOSE TO, OR TAP ANY WATER MAIN UNLESS DULY AUTHORIZED TO DO SO, IN WRITING, BY THE AUTHORITY HAVING JURISDICTION AND THE OWNER. ANY ADVERSE CONSEQUENCES OF SCHEDULED OR UNSCHEDULED DISRUPTIONS OF SERVICE TO THE PUBLIC ARE TO BE THE LIABILITY OF THE CONTRACTOR.
- NOTICE SHALL BE GIVEN BY THE CONTRACTOR, UNLESS WAIVED BY THE AUTHORITY HAVING JURISDICTION, TO ALL USERS TO AFFECTED BY A PROPOSED UTILITY OUTAGE, AT LEAST 48 HOURS IN ADVANCE OF THE PROPOSED OUTAGE.
- ANY CONSTRUCTION THAT INVOLVES ELECTRICAL WIRING, CONDUIT RELOCATION OR INSTALLATION, OR REMOVAL OF ELECTRIFIED UTILITIES MUST BE DONE IN COORDINATION WITH THE CITY OF SOUTHFIELD BUILDING DEPARTMENT.
- A MINIMUM VERTICAL SEPARATION OF 18 INCHES IS REQUIRED AT ALL WATER MAIN CROSSINGS WITH SANITARY SEWER OR STORM SEWER.
- WHERE A VERTICAL SEPARATION BETWEEN PROPOSED UTILITIES AND EXISTING FRANCHISE UTILITIES IS NOT FEASIBLE, CONTRACTOR SHALL PROVIDE A CONCRETE CRADLE (MDOT S3 OR EQUIVALENT; 6" MIN. THICKNESS) TO PROTECT BOTH UTILITIES.
- AFTER CONSTRUCTION IS COMPLETED, THE CONTRACTOR SHALL PROVIDE THE OWNER WITH AN AS-BUILT RECORD OF UTILITY CONSTRUCTION. THE AS-BUILT SHALL INCLUDE LOCATION AND LENGTH DEVIATIONS OR CHANGES TO THE PLAN. CONTRACTOR SHALL VERIFY AND RECORD ELEVATIONS UNLESS DIRECTED OTHERWISE BY THE OWNER'S REPRESENTATIVE.

**CITY OF SOUTHFIELD STANDARD NOTES**

NOTIFY THE CITY OF SOUTHFIELD ENGINEERING DIVISION (248) 796-4810 A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.

- ALL CONSTRUCTION MUST CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS ADOPTED BY THE CITY OF SOUTHFIELD.
- UTILITIES MUST BE LOCATED UNDERGROUND.
- CALL MISS DIG (1-800-482-7171 / 811) A MINIMUM OF SEVENTY-TWO (72) HOURS PRIOR TO THE START OF CONSTRUCTION.
- ALL SOIL EROSION AND SILT MUST BE CONTROLLED AND CONTAINED ON-SITE.
- ALL EXCAVATION UNDER OR WITHIN THREE FEET (3') OF PUBLIC PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (CLASS II MDOT).
- THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
- PRIOR TO THE ISSUANCE OF AN OCCUPANCY PERMIT, ENGINEERING SITE INSPECTION IS REQUIRED.



PROJECT NUMBER	DATE
0153-23-0180	4/20/24
REVISION	DESCRIPTION

PROJECT NUMBER: 0153-23-0180  
 DATE: 4/20/24  
 CITY OF SOUTHFIELD  
 SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
 OAKLAND COUNTY  
 NOTES

C-002



JOB BENCHMARK #204  
 SET COTTON SPINDLE IN SOUTH EAST  
 FACE TELEPHONE POLE IN NORTH WEST  
 QUAD LASHER AND FIRE STATION NORTH  
 DRIVEWAY. ELEV 652.90

JOB BENCHMARK #205  
 SET COTTON SPINDLE IN WEST FACE OF  
 TELEPHONE POLE IN NORTHWEST QUAD  
 LASHER AND SOUTH LOT DRIVEWAY. ELEV 648.49

TRAVERSE POINT #100  
 N 354963.31  
 E 13421346.59 ELEV 657.87

TRAVERSE POINT #101  
 N 354788.40  
 E 13421251.98 ELEV 658.18

TRAVERSE POINT #102  
 N 354646.67  
 E 13421082.87 ELEV 657.81

TRAVERSE POINT #103  
 N 354785.19  
 E 13421458.64 ELEV 649.60

TRAVERSE POINT #104  
 N 354980.53  
 E 13421728.78 ELEV 652.00

TRAVERSE POINT #105  
 N 354780.67  
 E 13421723.02 ELEV 647.58

PARCEL DESCRIPTION - 24477 LAHSER RD (24-28-226-014)  
 (PER OAKLAND COUNTY TAX ROLLS)

A PARCEL OF LAND BEING A PART OF THE NE 1/4 OF SECTION 28, TOWN 1 NORTH, RANGE 10 EAST, CITY OF SOUTHFIELD, OAKLAND COUNTY, MICHIGAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT POINT DISTANT S 00-04-15 W 1452.25 FT FROM NE SEC COR, TH S 00-04-15 W 215 FT, TH N 87-16-15 W 460.22 FT, TH N 00-04-15 E 268.85 FT, TH S 89-55-45 E 368.54 FT, TH S 00-04-15 W 75 FT, TH S 89-55-45 E 80 FT TO BEG, ALSO ALL THAT PART LYING NWLY OF CENTER THREAD OF RIVER ROUGE OF FOLLOWING PARCEL DESCRIPTION BEGINNING AT POINT DISTANT S 00-04-15 W 1667.25 FT FROM NE SEC COR, TH N 87-16-15 W 660 FT & S 00-04-15 W 396 FT, TH S 87-16-15 E 660 FT, TH N 00-04-15 E 396 FT TO BEG, ALSO PART OF NE 1/4 DESCRIPTION AS BEGINNING AT POINT DISTANT S 00-04-15 W 60 FT & S 89-43-00 W 60 FT & S 00-04-15 W 1316.88 FT & N 89-55-45 W 399.54 FT & S 00-04-15 W 127.13 FT FROM NE SEC COR, TH S 00-04-15 W 141.52 FT, TH N 87-16-15 W 118.52 FT, TH N 02-06-14 W 18.70 FT, TH N 45-30-00 E 167.19 FT TO BEG, ALSO PART OF NE 1/4 DESCRIPTION AS BEGINNING AT POINT DISTANT S 00-04-15 W 60 FT & S 00-04-15 W 1316.88 FT & N 89-55-45 W 399.54 FT FROM NE SEC COR, TH N 89-55-45 W 55.20 FT, TH S 28-59-17 W 137.19 FT, TH S 89-55-45 W 104.55 FT, TH S 46-59-45 W 60.53 FT, TH S 38-36-01 W 89 FT, TH S 68-00-27 W 46.69 FT TO A POINT ON LINE LYING 150 FT W & PARALLEL TO NWLY LINE OF FORMER TAX PARCEL 24-28-226-012, TH ALG SD W LINE S 00-04-05 W TO POINT ON CENTER THREAD OF RIVER ROUGE, TH ELY ALG SD CENTERLINE TO POINT ON W LINE OF FORMER TAX PARCEL 24-28-226-012, TH ALG SD W LINE N 00-04-15 E TO A POINT LOC S 00-04-15 E TO A POINT LOC S 00-04-15 W 1667.25 FT & N 87-16-15 W 660 FT FROM NE SEC COR, TH S 87-16-15 E 81.26 FT, TH N 02-06-14 W 18.70 FT, TH N 45-30-00 E 19 FT, TH N 00-04-15 E 127.13 FT TO BE 10.10 A SPLIT/COMBINED ON 10/20/2022 FROM 76-24-28-226-011, 76-24-226-012.



NOTES:

- EXISTING CONDITIONS ARE PRESENTED BASED ON PARTIAL TOPOGRAPHIC SURVEY & GIS INFORMATION BY OHM ADVISORS. ALL EXISTING INFORMATION PRESENTED IN THESE PLANS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR, ANY DISCREPANCIES IN THE PLAN SHALL BE MADE AWARE TO THE ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
- ONE-CALL UTILITY LOCATIONS: MISSDIG - 811 OR 800-482-7171. CONTRACTOR SHALL OPEN AN EXCAVATION TICKET A MINIMUM OF 3 WORKING DAYS PRIOR TO ANY EXCAVATION. WHEN MARKINGS AND FLAGS ARE DISRUPTED OR DESTROYED - CALL FOR REMARKING.
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATIONS AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND LIMITED MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION SHALL NOT BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY THE OWNER OR ENGINEER OF DISCREPANCIES IN THE PLANS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS UNLESS OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE OWNER'S REPRESENTATIVE. THE ENGINEER AND OWNER ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE LOCATION OR DEPTH OF ANY EXISTING UTILITY SHOWN OR NOT SHOWN ON THE PROJECT DRAWINGS.

LEGEND:

EXISTING LANDSCAPING

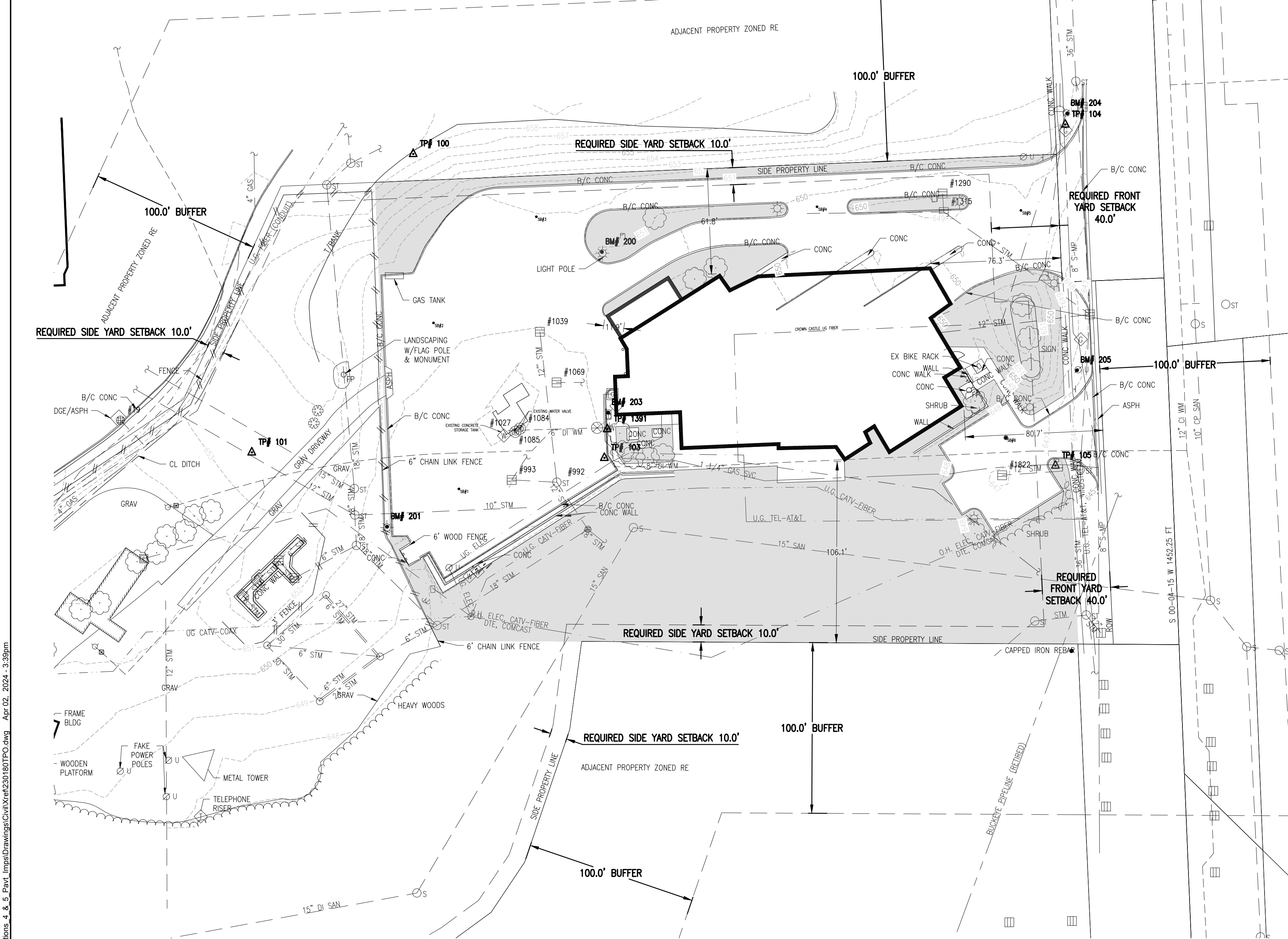
STORM STRUCTURE INVENTORY

#19 RD CB RIM 655.12 8" CLAY S INV 652.65	#907 SQ CB RIM 642.06 6" PVC SE INV 641.06 6" PVC N INV 641.04	#1069 SQ CB RIM 649.73 6" PVC E INV 646.18
#872 MH RIM 651.05 CONFINED SPACE TRAINING	#921 SQ CB RIM 641.72 6" PVC E INV 640.69 6" PVC S INV 640.67 6" PVC S INV 640.66	#1290 SQ CATCH BASIN T/CAST 649.67 12" RCP S INV 645.82
#876 MH RIM 648.79 CONFINED SPACE TRAINING	#992 STM MH RIM 649.12 12" CONC N INV 644.40 12" CLAY N INV 644.61 12" CONC SE INV 640.69	#1315 SQ CATCH BASIN T/CAST 648.84 NO FLOW 12" RCP N INV 645.22 12" RCP SE INV 645.14
#877 MH RIM 648.93 CONFINED SPACE TRAINING	#993 SQ CB RIM 649.04 12" CLAY E INV 645.04 6" CLAY NE INV 645.09	#1657 CATCH BASIN-IN CURB T/CAST 650.18 12" CMP N INV 648.32
#886 MH RIM 650.73 CONFINED SPACE TRAINING	#1039 SQ CB RIM 649.90 12" RCP S INV 645.55	#1717 CATCH BASIN-IN CURB T/CAST 646.34 FLOW SOUTH 12" RCP NW INV 641.14 12" RCP W INV 641.13 36" RCP N INV 639.04 36" RCP S INV 638.99
#889 STM MH RIM 651.47 18" RCP N INV 638.27 PVC SE T/P 639.49 (CAPPED)	#1051 STM MH RIM 657.04 18" CLAY NW INV 641.99 18" RCP NE INV 641.92 18" RCP SW INV 641.88	#1822 SQ CATCH BASIN T/CAST 646.78 12" RCP E INV 642.75
#890 STM MH RIM 651.20 18" RCP S INV 637.93 10" PVC SE INV 639.95 18" RCP N INV 637.99 12" PVC NW INV 640.03	#1052 STM MH RIM 657.03 18" RCP NE INV 641.51 18" RCP SW INV 641.42	#2001 STORM MANHOLE T/CAST 646.19 FLOW SOUTH 36" RCP N INV 633.11 36" RCP S INV 632.95

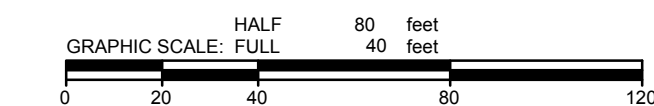
WATER STRUCTURE INVENTORY

#497 FIRE HYDRANT F.G. 655.08	#972 WATER FIRE RISER #972 WATER FIRE RISER	#1074 GATE VALVE AND WELL RIM 649.96 6" DI E-W T/P 644.56
#501 GATE VALVE AND BOX RIM 654.76	#1072 FIRE HYDRANT F.G. 650.47	#1084 WATER CTRL VALVE #1085 WATER CTRL VALVE #1027 WATER DRAINAGE RISER
#504 GATE VALVE AND WELL RIM 654.36 E-W-N T/P 649.36	#1073 GATE VALVE AND BOX RIM 650.42	

SITE DATA TABLE	
MUNICIPALITY:	CITY OF SOUTHFIELD
PARCEL NUMBER:	24-28-226-014
ZONING DISTRICT:	R-E
TOTAL LOT AREA (EXISTING):	5.78 AC
TOTAL LOT AREA (PROPOSED):	5.78 AC
TOTAL DISTURBED AREA:	1.11 AC
REQUIRED FRONT YARD SETBACK:	40 FT
EXISTING FRONT YARD SETBACK:	61 FT
REQUIRED SIDE YARD SETBACK:	10 FT
EXISTING SIDE YARD SETBACK:	62 FT
REQUIRED REAR YARD SETBACK:	35 FT
EXISTING REAR YARD SETBACK:	132 FT
BUILDING FOOTPRINT AREA:	18,770 SFT
EXISTING GROSS FLOOR AREA:	18,770 SFT
EXISTING BUILDING LOT COVERAGE:	7.5%
REQUIRED LANDSCAPED AREA:	PER CITY PLANNING DEPT.
EXISTING LANDSCAPED AREA:	±1.06 AC



1 FIRE STATION #5  
 24477 LAHSER, SOUTHFIELD



ISSUED FOR:	PLANS FOR BIDDING	DATE
REVISION	DESCRIPTION	

PROJECT NUMBER: 0153-23-0180  
 PM: ZAH  
 CITY OF SOUTHFIELD  
 SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
 OAKLAND COUNTY  
 TOPOGRAPHIC SURVEY

C-003

DRAWING PATH: P:\0128\_01650163230180\_Fire Stations 4 & 5\_Paving\ImpasDrawings\Civil\2301801TPO.dwg Apr 02, 2024 - 3:39pm

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JOB BENCHMARK #206 SET COTTON SPINDLE IN NORTH FACE OF POWER POLE EAST SIDE DUFFY, SOUTH OF FIRE STATION DRIVE. ELEV 707.83	
JOB BENCHMARK #207 SET CHISELED BOX ON SOUTH SIDE LIGHT POLE BASE WEST SIDE OF PARKING LOT. ELEV 710.94	
TRAVERSE POINT #106 N 366835.82 E 13412926.48 ELEV 707.58	
TRAVERSE POINT #107 N 366868.06 E 13413098.96 ELEV 708.49	

PARCEL DESCRIPTION - 25120 W 12 MILE RD (24-08-378-103)  
(PER OAKLAND COUNTY TAX ROLLS)

A PARCEL OF LAND BEING A PART OF SECTION 8, TOWN 1 NORTH, RANGE 10 EAST, CITY OF SOUTHFIELD, OAKLAND COUNTY, MICHIGAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

SUPERVISORS PLAT NO. 5 N 375.60 FT OF S 402.60 FT OF LOT 6, ALSO 220 FT OF LOT 3-23-04 FR 098& 099



NOTES:

- EXISTING CONDITIONS ARE PRESENTED BASED ON PARTIAL TOPOGRAPHIC SURVEY & GIS INFORMATION BY OHM ADVISORS. ALL EXISTING INFORMATION PRESENTED IN THESE PLAN SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR, ANY DISCREPANCIES IN THE PLAN SHALL BE MADE AWARE TO THE ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
- ONE-CALL UTILITY LOCATING: MISSDIG - 811 OR 800-482-7171. CONTRACTOR SHALL OPEN AN EXCAVATION TICKET A MINIMUM OF 3 WORKING DAYS PRIOR TO ANY EXCAVATION. WHEN MARKINGS AND FLAGS ARE DISRUPTED OR DESTROYED - CALL FOR REMARKING.
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATIONS AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND LIMITED MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION SHALL NOT BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY THE OWNER OR ENGINEER OF DISCREPANCIES IN THE PLANS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS UNLESS OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE OWNER'S REPRESENTATIVE. THE ENGINEER AND OWNER ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE LOCATION OR DEPTH OF ANY EXISTING UTILITY SHOWN OR NOT SHOWN ON THE PROJECT DRAWINGS.

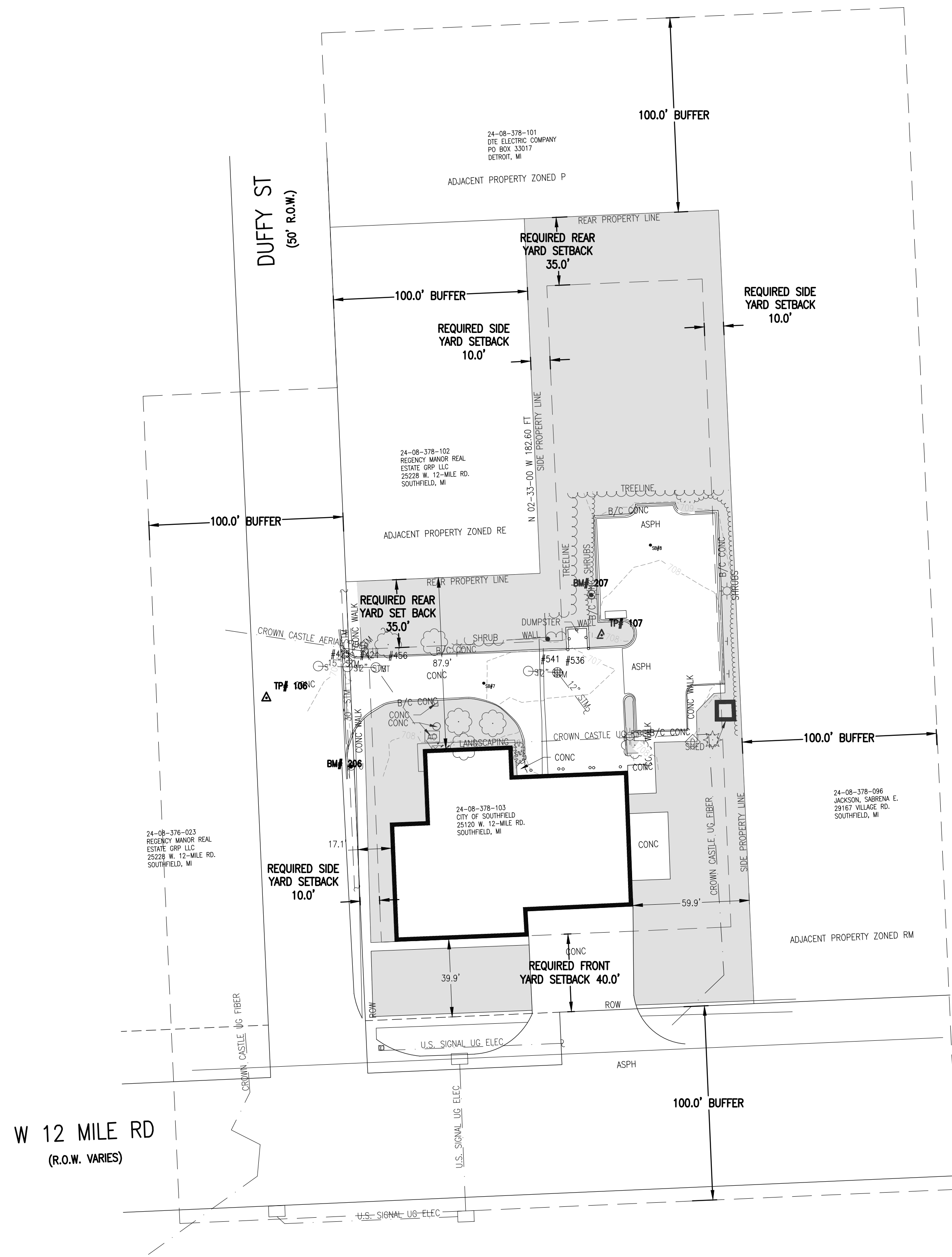
LEGEND:

EXISTING LANDSCAPING

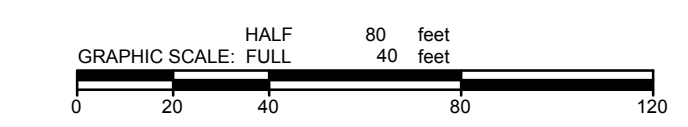
SITE DATA TABLE

MUNICIPALITY:	CITY OF SOUTHFIELD
PARCEL NUMBER:	24-08-378-103
ZONING DISTRICT:	R-C
TOTAL LOT AREA (EXISTING):	1.37 AC
TOTAL LOT AREA (PROPOSED):	1.37 AC
TOTAL DISTURBED AREA:	0.26 AC
REQUIRED FRONT YARD SETBACK:	40 FT
EXISTING FRONT YARD SETBACK:	40 FT
REQUIRED SIDE YARD SETBACK:	10 FT
EXISTING SIDE YARD SETBACK:	17 FT
REQUIRED REAR YARD SETBACK:	35 FT
EXISTING REAR YARD SETBACK:	88 FT
BUILDING FOOTPRINT AREA:	9,920 SFT
EXISTING GROSS FLOOR AREA:	9,920 SFT
EXISTING BUILDING LOT COVERAGE:	16.6%
REQUIRED LANDSCAPED AREA:	0 AC
EXISTING LANDSCAPED AREA:	0.82 AC

- #424 STORM MANHOLE  
T/CAST 707.11  
FLOW SOUTH  
30" RCP N INV 699.62  
12" RCP NE INV 702.29  
12" IRON E INV 699.75  
30" RCP S INV 699.45  
15" RCP W INV 699.94
- #425 STORM MANHOLE  
T/CAST 707.25  
ONLY 1 PIPE  
12" IRON W INV 699.99
- #456 STORM MANHOLE  
T/CAST 707.54  
ONLY 1 PIPE  
12" IRON E INV 700.07
- #536 RD CATCH BASIN  
T/CAST 706.55  
12" RCP SE INV 702.48
- #541 STORM MANHOLE  
T/CAST 706.80  
ONLY 1 PIPE  
12" IRON E INV 699.33



**1 FIRE STATION #4**  
25120 W 12 MILE RD

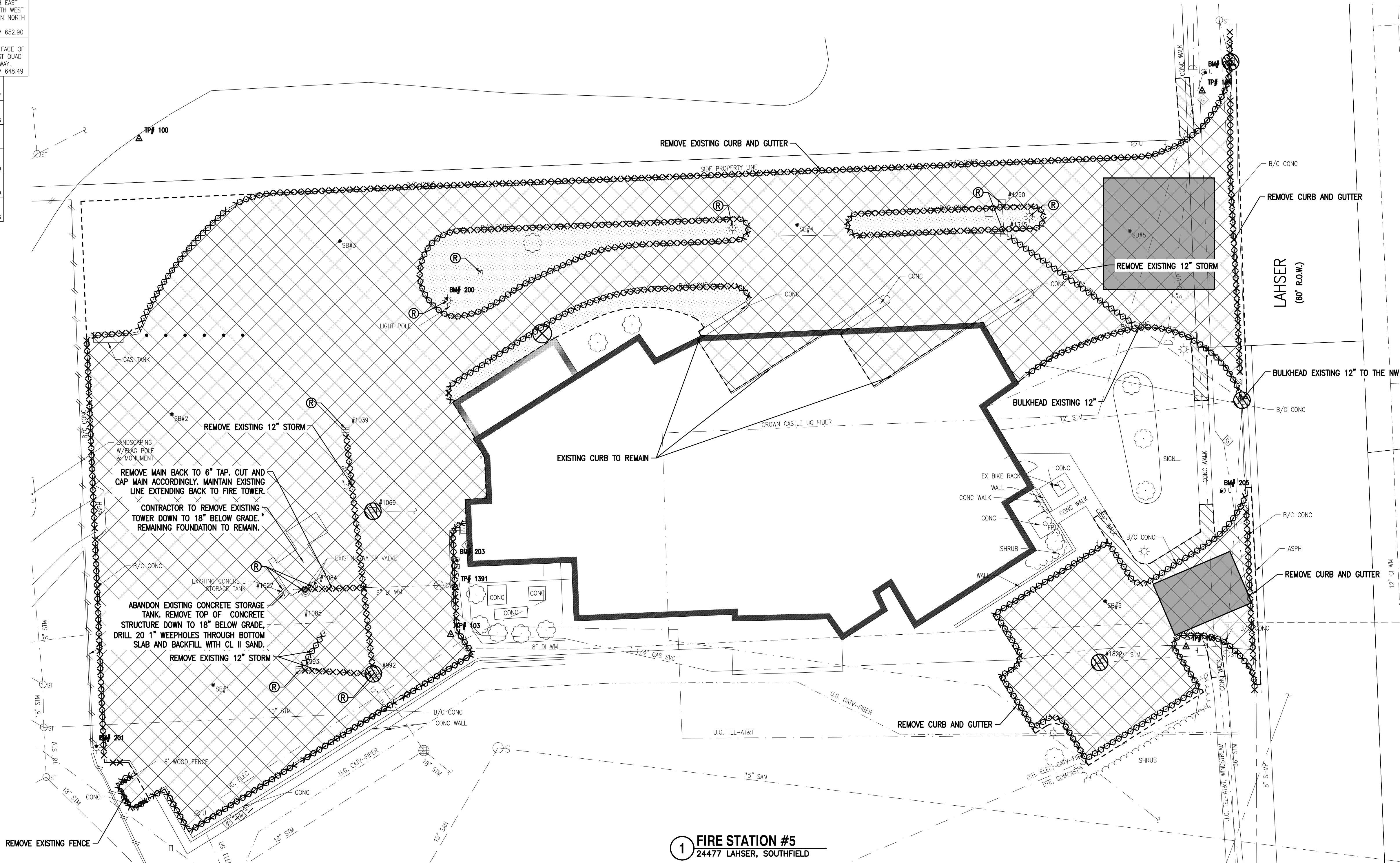
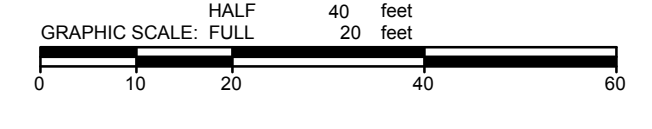


ISSUED FOR:	PLANS FOR BIDDING	4/2/24	DATE
REVISION	DESCRIPTION		

CITY OF SOUTHFIELD  
SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
OAKLAND COUNTY  
TOPOGRAPHIC SURVEY

C-004

JOB BENCHMARK #204 SET COTTON SPINDLE IN SOUTH EAST FACE TELEPHONE POLE IN NORTH WEST QUAD LASHER AND FIRE STATION NORTH DRIVEWAY. ELEV 652.90	
JOB BENCHMARK #205 SET COTTON SPINDLE IN WEST FACE OF TELEPHONE POLE IN NORTHWEST QUAD LASHER AND SOUTH LOT DRIVEWAY. ELEV 648.49	
TRAVERSE POINT #100 N 354963.31 E 13421346.59 ELEV 657.87	
TRAVERSE POINT #101 N 354788.40 E 13421251.98 ELEV 658.18	
TRAVERSE POINT #102 N 354646.67 E 13421082.87 ELEV 657.81	
TRAVERSE POINT #103 N 354785.19 E 13421458.64 ELEV 649.60	
TRAVERSE POINT #104 N 354980.53 E 13421728.78 ELEV 652.00	
TRAVERSE POINT #105 N 354780.67 E 13421723.02 ELEV 647.58	



**1 FIRE STATION #5**  
24477 LAHSER, SOUTHFIELD

**NOTES:**

- ALL DEMOLITION SHALL CONFORM TO LOCAL CODES AND ORDINANCES.
- STAGING AND PHASING OF DEMOLITION AND CONSTRUCTION SHALL BE COORDINATED WITH OWNER PRIOR TO WORK BEGINNING.
- SOIL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO ANY DEMOLITION WORK COMMENCING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE CLEAN-UP, NOISE CONTROL, DUST CONTROL, AND STREET/PARKING LOT SWEEPING AS SPECIFIED IN THE CONTRACT DOCUMENTS.
- ONE-CALL UTILITY LOCATING: MISSDIG - 811 OR 800-482-7171. CONTRACTOR SHALL OPEN AN EXCAVATION TICKET A MINIMUM OF 3 WORKING DAYS PRIOR TO ANY EXCAVATION. WHEN MARKINGS AND FLAGS ARE DISRUPTED OR DESTROYED - CALL FOR REMARKING.
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATIONS AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND LIMITED MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION SHALL NOT BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY THE OWNER OR ENGINEER OF DISCREPANCIES IN THE PLANS. THE CONTRACTOR SHALL VERIFY THE DEPTH OF ELECTRICAL CONDUIT BEFORE SCARIFYING GRAVEL SURFACE AND PROTECT IN PLACE DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY ELECTRICAL CONDUIT DAMAGED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS UNLESS OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE OWNER'S REPRESENTATIVE. THE ENGINEER AND OWNER ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE LOCATION OR DEPTH OF ANY EXISTING UTILITY SHOWN OR NOT SHOWN ON THE PROJECT DRAWINGS.
- ALL TREES LARGER THAN 6" DIA. WITHIN THE CONSTRUCTION AREAS SHALL BE PROTECTED FROM DAMAGE, UNLESS IDENTIFIED FOR REMOVAL. TREES IDENTIFIED FOR REMOVAL SHALL INCLUDE THE COMPLETE REMOVAL OF THE STUMP AT NO ADDITIONAL COST TO THE OWNER.
- ALL PAVEMENT TO BE REMOVED SHALL BE SAW CUT TO THE FULL DEPTH TO PROVIDE A SMOOTH VERTICAL EDGE AND TO PROTECT ADJACENT SURFACES FROM DAMAGE.
- TOPSOIL STRIPPING
- STRIP THE FULL DEPTH OF TOPSOIL ONLY FROM THOSE AREAS THAT WILL BE DISTURBED BY EXCAVATION, FILLING, CONSTRUCTION, OR COMPACTION BY EQUIPMENT.
- STOCKPILE TOPSOIL WITHOUT INTERMIXING WITH ANY OTHER MATERIAL - BORROW TOPSOIL TO REPLACE MATERIAL CONTAMINATED BY THE CONTRACTOR SHALL BE AT THE CONTRACTOR'S EXPENSE.
- TEMPORARY STABILIZATION OF THE STOCKPILE(S) SHALL BE COMPLETED WITHIN SEVEN (7) DAYS OF THE FORMATION OF THE STOCKPILE, IF IT IS TO REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN THIRTY (30) DAYS.
- TEMPORARY STOCKPILES: PROTECTIVE MEASURES SHALL BE INCORPORATED BY THE CONTRACTOR TO ENSURE SAFETY AND CONTROL EROSION ASSOCIATED WITH THE TEMPORARY STOCKPILES.
- EXCAVATED SOILS SHALL BE DISTRIBUTED ON SITE PER THE GRADING PLAN.
- DISPOSAL: ALL DEMOLITION AND REMOVED MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OFF-SITE IN ACCORDANCE TO ALL FEDERAL, STATE, AND LOCAL HAULING AND DISPOSAL REGULATIONS UNLESS DIRECTED OTHERWISE BY THE OWNER. DISPOSAL IN WETLANDS AND FLOODPLAINS IS PROHIBITED. BURNING ON-SITE IS PROHIBITED.

**LEGEND**

- INLET PROTECTION - FABRIC DROP
- PAVEMENT REMOVAL
- EXCAVATION, EARTH, MODIFIED
- CURB AND GUTTER, REM
- SEWER, REM
- AGGREGATE TRACKING MAT



Know what's below.  
Call before you dig.

ISSUED FOR: PLANS FOR BIDDING	4/2/24	DATE
REVISION		DESCRIPTION

CITY OF SOUTHFIELD  
SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
OAKLAND COUNTY  
REMOVAL PLAN

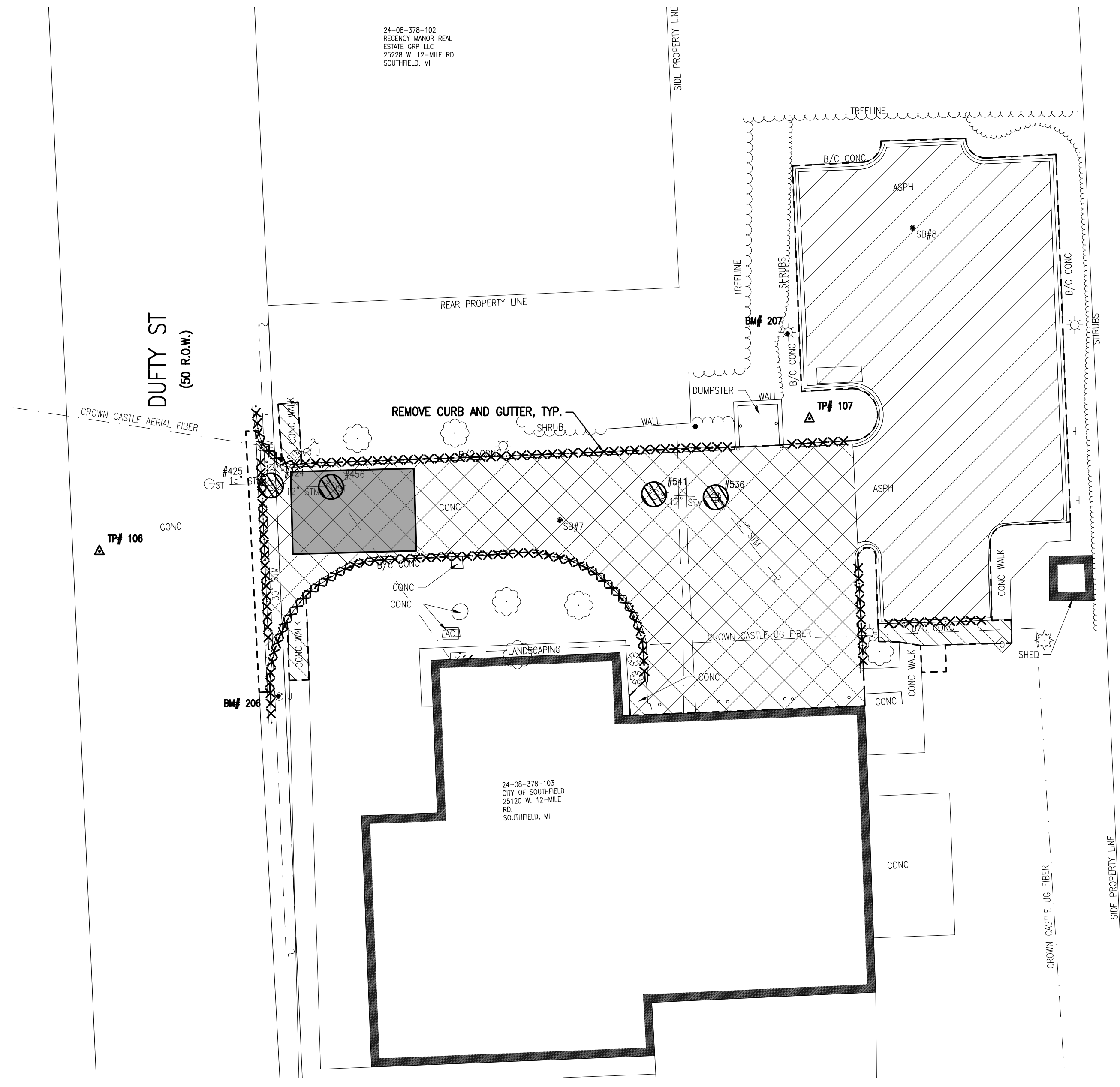
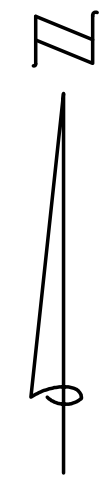
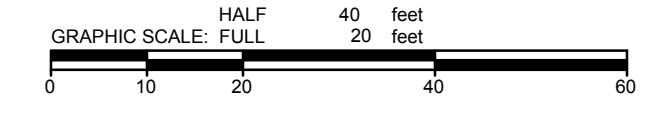
C-120

DRAWING PATH: P:\0125\_01650153230180\_Fire Stations 4 & 5\_Paving Improvements\Civil\Removal\230180REM.dwg Apr 02, 2024 - 3:39pm

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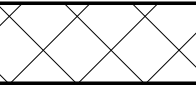

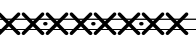


JOB BENCHMARK #206 SET COTTON SPINDLE IN NORTH FACE OF POWER POLE EAST SIDE DUFTY, SOUTH OF FIRE STATION DRIVE. ELEV 707.83	
JOB BENCHMARK #207 SET CHISELED BOX ON SOUTH SIDE LIGHT POLE BASE WEST SIDE OF PARKING LOT. ELEV 710.94	
TRAVERSE POINT #106 N 366835.82 E 13412926.48 ELEV 707.58	
TRAVERSE POINT #107 N 366868.06 E 13413098.96 ELEV 708.49	



**NOTES:**

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  - STRIP THE FULL DEPTH OF TOPSOIL ONLY FROM THOSE AREAS THAT WILL BE DISTURBED BY EXCAVATION, FILLING, CONSTRUCTION, OR COMPACTION BY EQUIPMENT.
  - STOCKPILE TOPSOIL WITHOUT INTERMIXING WITH ANY OTHER MATERIAL - BORROW TOPSOIL TO REPLACE MATERIAL CONTAMINATED BY THE CONTRACTOR'S EXPENSE.
  - TEMPORARY STABILIZATION OF THE STOCKPILE(S) SHALL BE COMPLETED WITHIN SEVEN (7) DAYS OF THE FORMATION OF THE STOCKPILE, IF IT IS TO REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN THIRTY (30) DAYS.
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- EXCAVATED SOILS SHALL BE DISTRIBUTED ON SITE PER THE GRADING PLAN.
- DISPOSAL: ALL DEMOLITION AND REMOVED MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OFF-SITE IN ACCORDANCE TO ALL FEDERAL, STATE, AND LOCAL HAULING AND DISPOSAL REGULATIONS UNLESS DIRECTED OTHERWISE BY THE OWNER. DISPOSAL IN WETLANDS AND FLOODPLAINS IS PROHIBITED. BURNING ON-SITE IS PROHIBITED.
- CONTRACTOR TO REMOVE EXISTING NON COMPLIANT POLE-MOUNTED BARRIER FREE SIGNS ALONG THE EAST PROPERTY LINE.
- CONTRACTOR TO TRIM/CUT BACK SHRUBS ENCRUCHING INTO ANY SIDEWALK AREAS (SOUTH AND WEST SIDES OF BUILDING ESPECIALLY).

**LEGEND**

-  INLET PROTECTION - FABRIC DROP
-  PAVEMENT REMOVAL
-  EXCAVATION, EARTH, MODIFIED
-  CURB AND GUTTER, REM
-  SEWER, REM
-  AGGREGATE TRACKING MAT

**1 FIRE STATION #4**  
25120 W 12 MILE RD



Know what's below.  
Call before you dig.

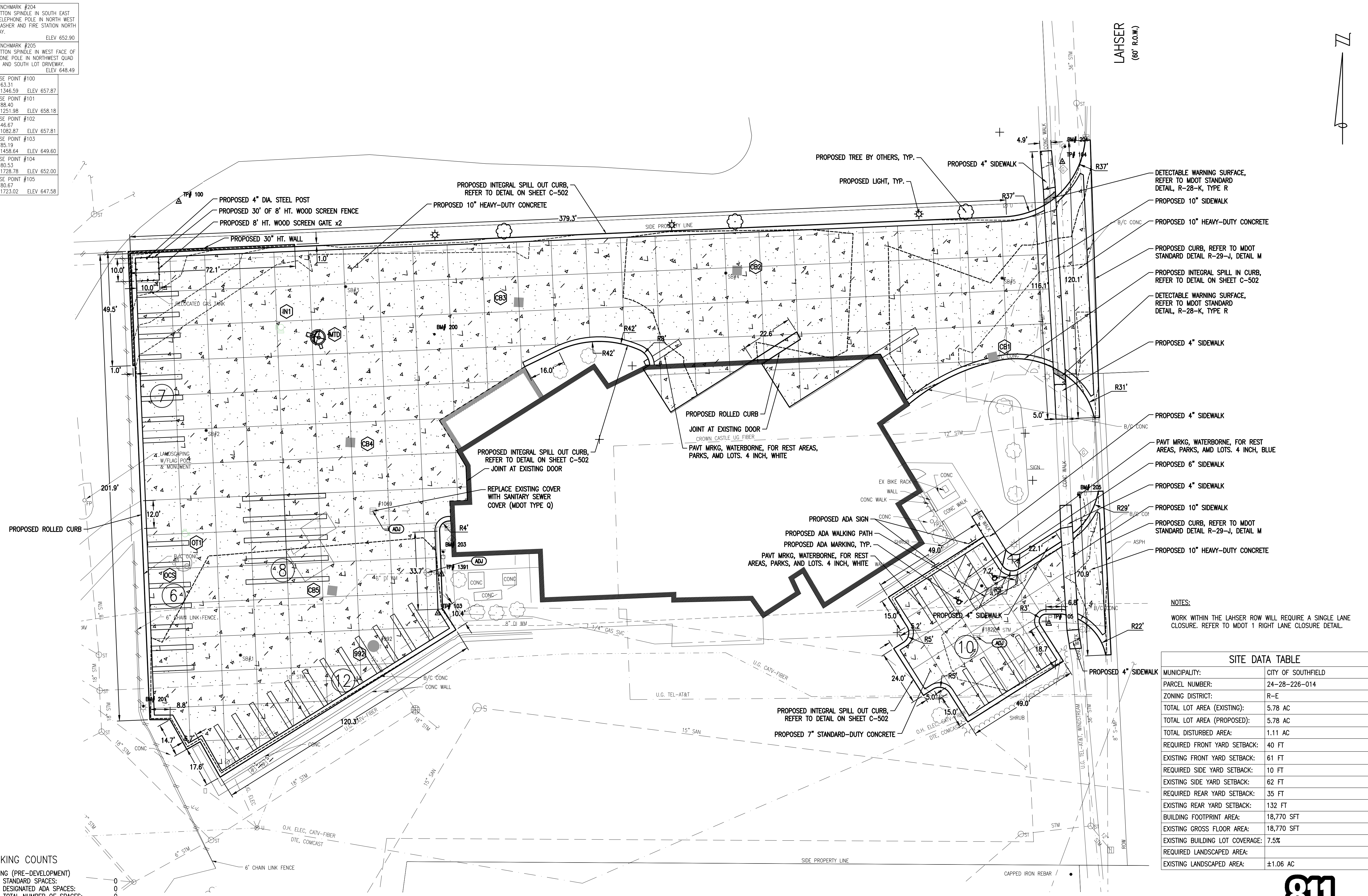
ISSUED FOR:	PLANS FOR BIDDING	4/2/24	DATE
REVISION	DESCRIPTION		

PROJECT NUMBER: 0153-23-0180  
 PM: ZAH  
 CITY OF SOUTHFIELD  
 SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
 OAKLAND COUNTY  
 REMOVAL PLAN  
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C-121



JOB BENCHMARK #204 SET COTTON SPINDLE IN SOUTH EAST FACE TELEPHONE POLE IN NORTH WEST QUAD LASHER AND FIRE STATION NORTH DRIVEWAY. ELEV 652.90	
JOB BENCHMARK #205 SET COTTON SPINDLE IN WEST FACE OF TELEPHONE POLE IN NORTHWEST QUAD LASHER AND SOUTH LOT DRIVEWAY. ELEV 648.49	
TRAVERSE POINT #100 N 354963.31 E 13421346.59 ELEV 657.87	
TRAVERSE POINT #101 N 354785.40 E 13421251.98 ELEV 658.18	
TRAVERSE POINT #102 N 354646.67 E 13421082.87 ELEV 657.81	
TRAVERSE POINT #103 N 354785.19 E 13421458.64 ELEV 649.60	
TRAVERSE POINT #104 N 354980.53 E 13421728.78 ELEV 652.00	
TRAVERSE POINT #105 N 354780.67 E 13421723.02 ELEV 647.58	



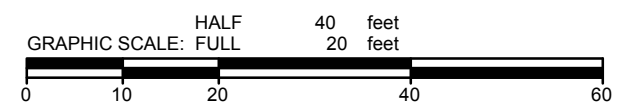
- DETECTABLE WARNING SURFACE, REFER TO MDOT STANDARD DETAIL, R-28-K, TYPE R
- PROPOSED 10" SIDEWALK
- PROPOSED 10" HEAVY-DUTY CONCRETE
- PROPOSED CURB, REFER TO MDOT STANDARD DETAIL R-29-J, DETAIL M
- PROPOSED INTEGRAL SPILL IN CURB, REFER TO DETAIL ON SHEET C-502
- DETECTABLE WARNING SURFACE, REFER TO MDOT STANDARD DETAIL, R-28-K, TYPE R
- PROPOSED 4" SIDEWALK
- PROPOSED 4" SIDEWALK
- PAVT MRKG, WATERBORNE, FOR REST AREAS, PARKS, AND LOTS. 4 INCH, BLUE
- PROPOSED 6" SIDEWALK
- PROPOSED 4" SIDEWALK
- PROPOSED 10" SIDEWALK
- PROPOSED CURB, REFER TO MDOT STANDARD DETAIL R-29-J, DETAIL M
- PROPOSED 10" HEAVY-DUTY CONCRETE

NOTES:  
WORK WITHIN THE LAHSER ROW WILL REQUIRE A SINGLE LANE CLOSURE. REFER TO MDOT 1 RIGHT LANE CLOSURE DETAIL.

SITE DATA TABLE	
MUNICIPALITY:	CITY OF SOUTHFIELD
PARCEL NUMBER:	24-28-226-014
ZONING DISTRICT:	R-E
TOTAL LOT AREA (EXISTING):	5.78 AC
TOTAL LOT AREA (PROPOSED):	5.78 AC
TOTAL DISTURBED AREA:	1.11 AC
REQUIRED FRONT YARD SETBACK:	40 FT
EXISTING FRONT YARD SETBACK:	61 FT
REQUIRED SIDE YARD SETBACK:	10 FT
EXISTING SIDE YARD SETBACK:	62 FT
REQUIRED REAR YARD SETBACK:	35 FT
EXISTING REAR YARD SETBACK:	132 FT
BUILDING FOOTPRINT AREA:	18,770 SFT
EXISTING GROSS FLOOR AREA:	18,770 SFT
EXISTING BUILDING LOT COVERAGE:	7.5%
REQUIRED LANDSCAPED AREA:	
EXISTING LANDSCAPED AREA:	±1.06 AC

PARKING COUNTS	
EXISTING (PRE-DEVELOPMENT)	
STANDARD SPACES:	0
DESIGNATED ADA SPACES:	0
TOTAL NUMBER OF SPACES:	0
PROPOSED (POST-DEVELOPMENT)	
STANDARD SPACES:	41
DESIGNATED ADA SPACES:	2
LANDBANKED SPACES:	0
TOTAL NUMBER OF SPACES:	43

**1 FIRE STATION #5**  
24477 LAHSER, SOUTHFIELD



REVISION	DESCRIPTION	DATE

CITY OF SOUTHFIELD  
SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
OAKLAND COUNTY  
SITE PLAN

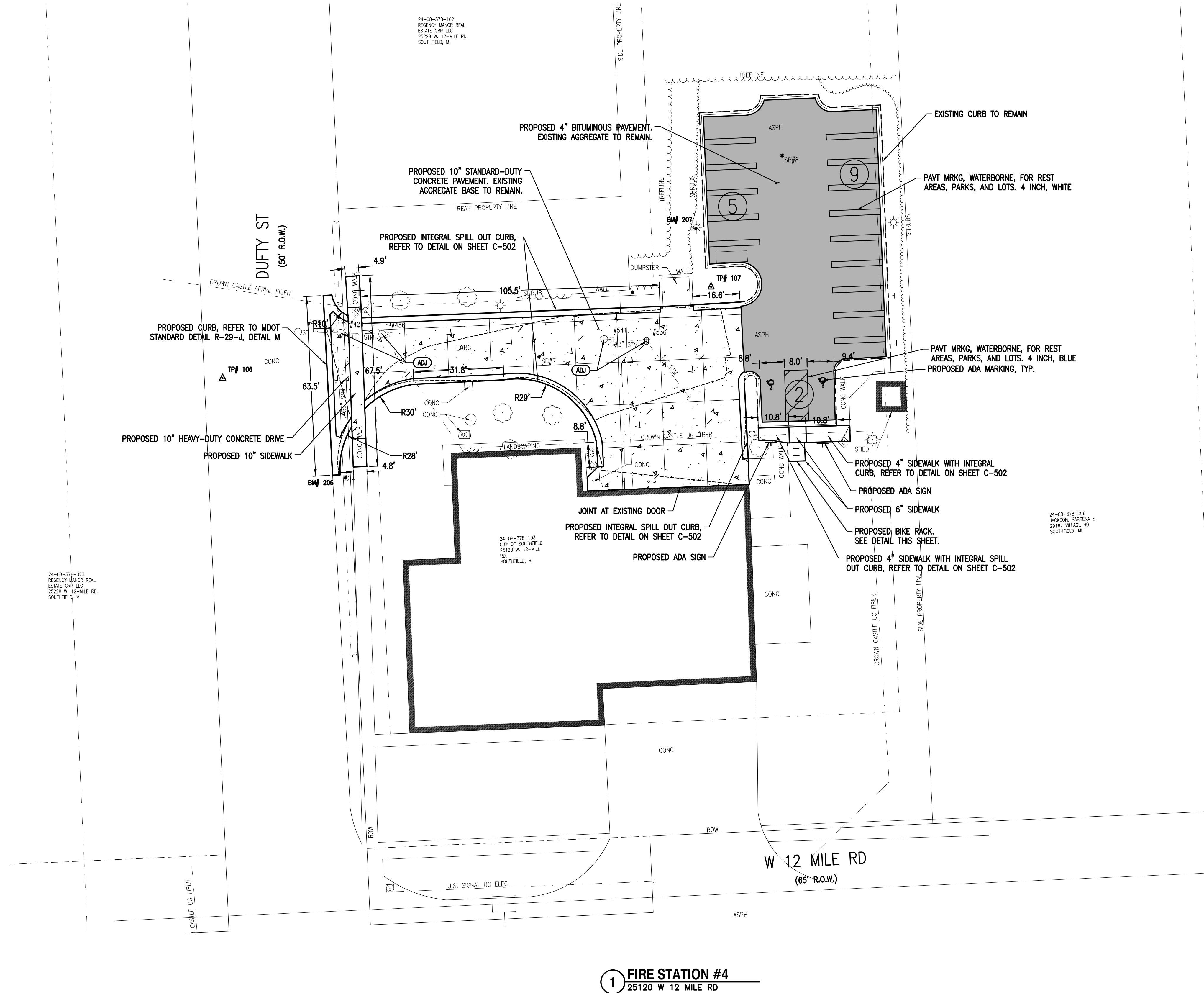
C-130

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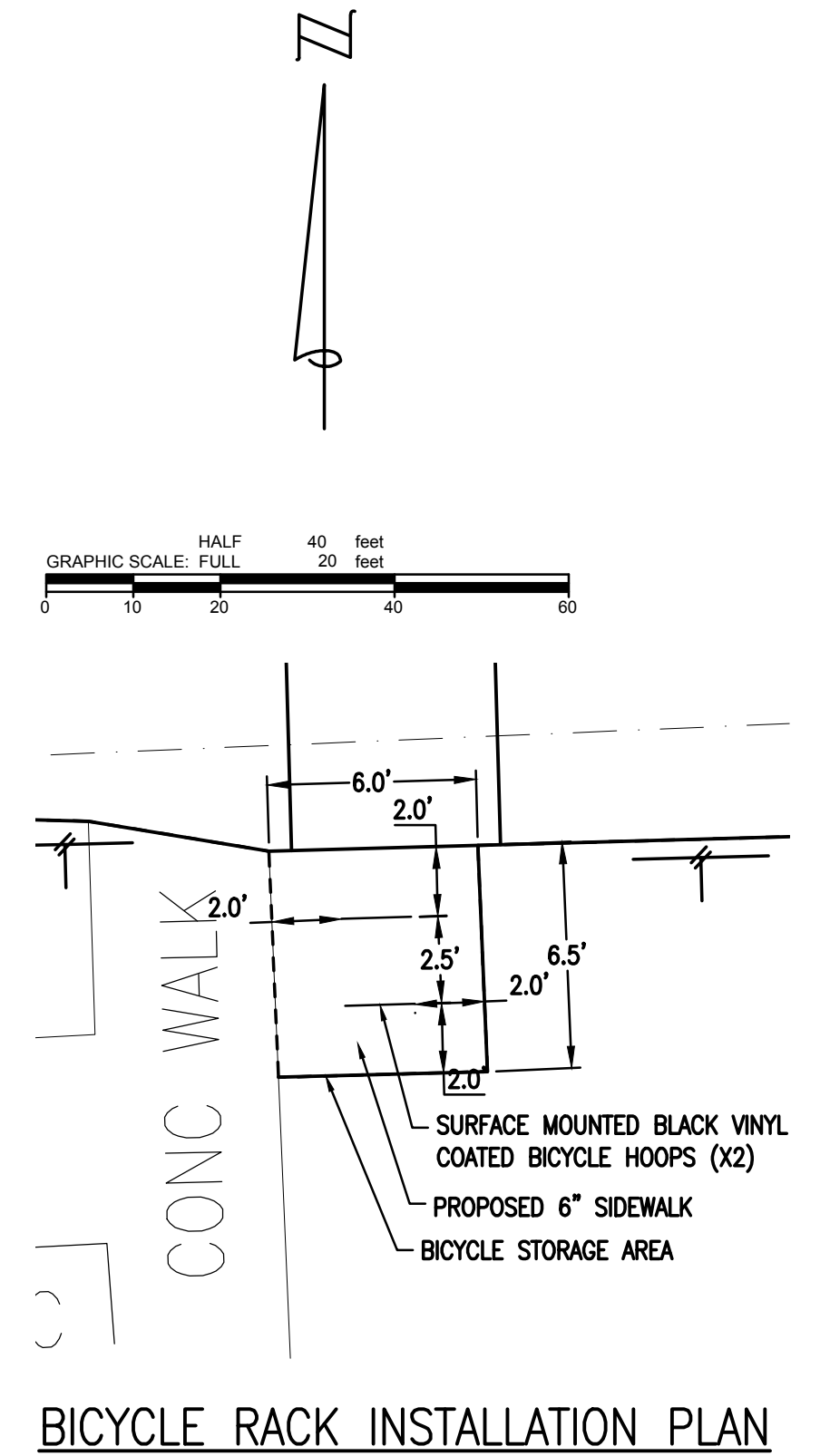
ISSUED FOR: PLANS FOR BIDDING 4/2/24 DATE  
REVISION DESCRIPTION  
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JOB BENCHMARK #206 SET COTTON SPINDLE IN NORTH FACE OF POWER POLE EAST SIDE DUFTY, SOUTH OF FIRE STATION DRIVE. ELEV 707.83	
JOB BENCHMARK #207 SET CHISELED BOX ON SOUTH SIDE LIGHT POLE BASE WEST SIDE OF PARKING LOT. ELEV 710.94	
TRAVERSE POINT #106 N 366835.82 E 13412926.48 ELEV 707.58	
TRAVERSE POINT #107 N 366868.06 E 13413098.96 ELEV 708.49	



**1 FIRE STATION #4**  
25120 W 12 MILE RD



**BICYCLE RACK INSTALLATION PLAN**

SCALE: 1:5

**PARKING COUNTS**

EXISTING (PRE-DEVELOPMENT)	
STANDARD SPACES:	12
DESIGNATED ADA SPACES:	0
TOTAL NUMBER OF SPACES:	12
PROPOSED (POST-DEVELOPMENT)	
STANDARD SPACES:	14
DESIGNATED ADA SPACES:	2
TOTAL NUMBER OF SPACES:	16

MAXIMUM SHIFT SIZE FOR THIS STATION IS 8 PERSONS PER DEPARTMENT STAFF.

SITE DATA TABLE	
MUNICIPALITY:	CITY OF SOUTHFIELD
PARCEL NUMBER:	24-08-378-103
ZONING DISTRICT:	O-S
TOTAL LOT AREA (EXISTING):	1.37 AC
TOTAL LOT AREA (PROPOSED):	1.37 AC
TOTAL DISTURBED AREA:	0.26 AC
REQUIRED FRONT YARD SETBACK:	40 FT
EXISTING FRONT YARD SETBACK:	40 FT
REQUIRED SIDE YARD SETBACK:	10 FT
EXISTING SIDE YARD SETBACK:	17 FT
REQUIRED REAR YARD SETBACK:	35 FT
EXISTING REAR YARD SETBACK:	88 FT
BUILDING FOOTPRINT AREA:	9,920 SFT
EXISTING GROSS FLOOR AREA:	9,920 SFT
EXISTING BUILDING LOT COVERAGE:	16.6%
REQUIRED LANDSCAPED AREA:	
EXISTING LANDSCAPED AREA:	0.54%



Know what's below.  
Call before you dig.



ISSUED FOR:	PLANS FOR BIDDING	DATE:	4/2/24
REVISION:	DESCRIPTION:		

CITY OF SOUTHFIELD  
SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
OAKLAND COUNTY  
SITE PLAN

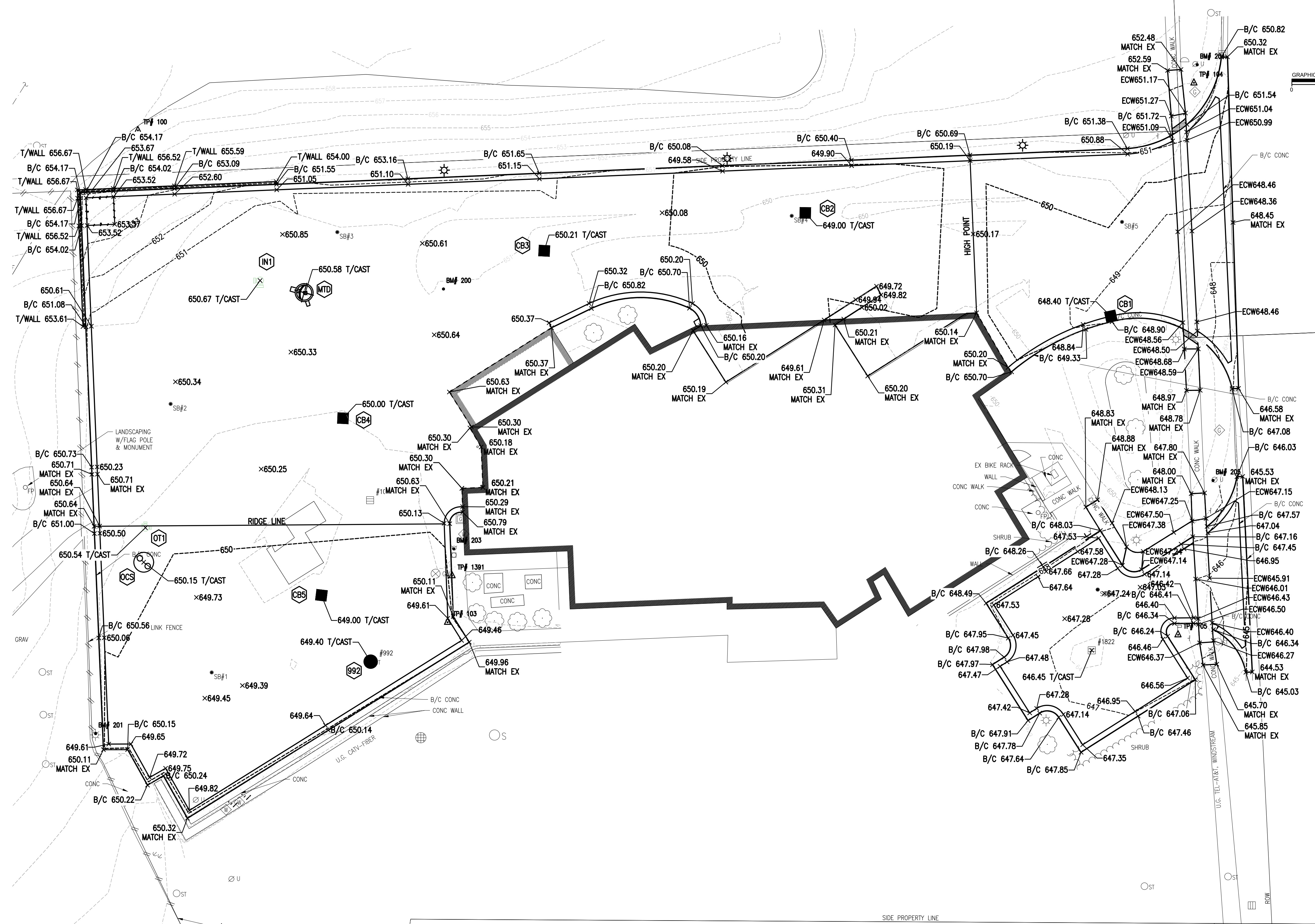
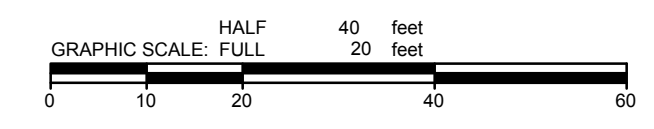
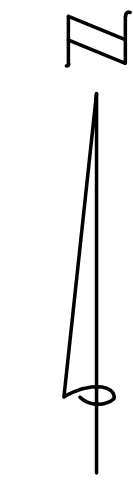
C-131

DRAWING PATH: P:\0725\_01650163230180\_Fire Stations 4 & 5\_Paving\ImpasDrawings\Civil\Plans\_Comet\230180CON.dwg Apr 02, 2024 - 3:39pm

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**1 FIRE STATION #5**  
24477 LAHSER, SOUTHFIELD



Know what's below.  
Call before you dig.

ISSUED FOR: PLANS FOR BIDDING	4/2/24	DATE
REVISION		DESCRIPTION

CITY OF SOUTHFIELD  
SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
OAKLAND COUNTY  
GRADING PLAN

PROJECT NUMBER 0153-23-0180	PM ZAH
--------------------------------	-----------

C-140

DRAWING PATH: P:\0125\_0165016320180\_Fire Stations 4 & 5\_Paving\ImpasDrawings\Civil\Grading\230180GRD.dwg Apr 02, 2024 - 3:39pm

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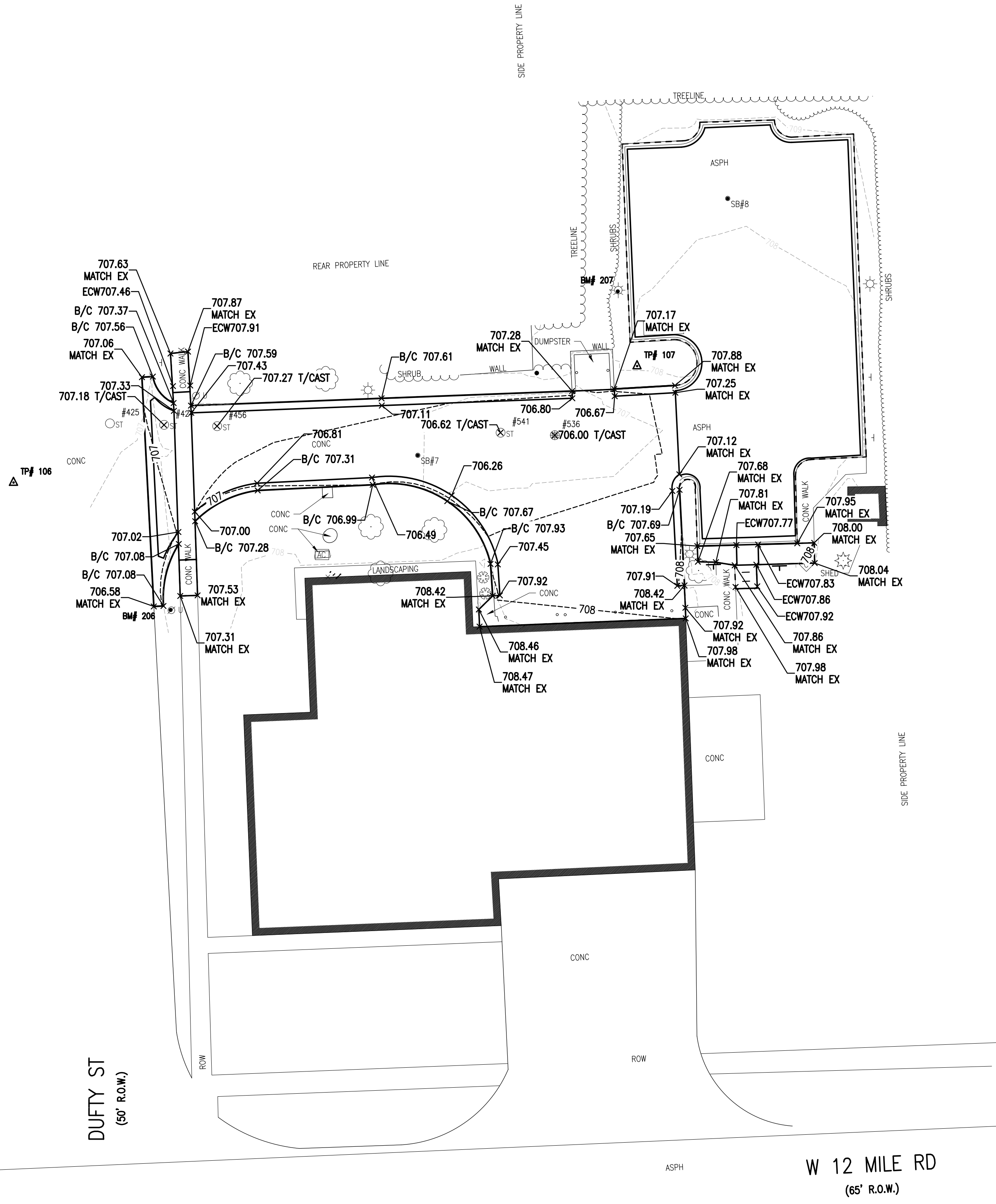
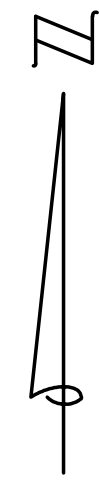
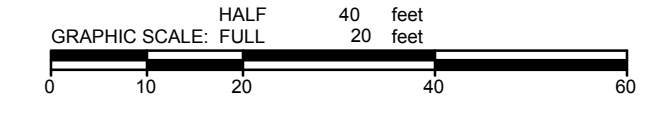


JOB BENCHMARK #206  
SET COTTON SPINDLE IN NORTH FACE  
OF POWER POLE EAST SIDE DUFTY,  
SOUTH OF FIRE STATION DRIVE.  
ELEV 707.83

JOB BENCHMARK #207  
SET CHISELED BOX ON SOUTH SIDE  
LIGHT POLE BASE WEST SIDE OF  
PARKING LOT.  
ELEV 710.94

TRAVERSE POINT #106  
N 366835.82  
E 13412926.48 ELEV 707.58

TRAVERSE POINT #107  
N 366868.06  
E 13413098.96 ELEV 708.49



**1 FIRE STATION #4**  
25120 W 12 MILE RD



Know what's below.  
Call before you dig.

ISSUED FOR: PLANS FOR BIDDING  
REVISION DESCRIPTION

REVISION	DESCRIPTION	DATE

PROJECT NUMBER: 0153-23-0180  
PM: ZAH

**CITY OF SOUTHFIELD**  
**SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS**  
OAKLAND COUNTY

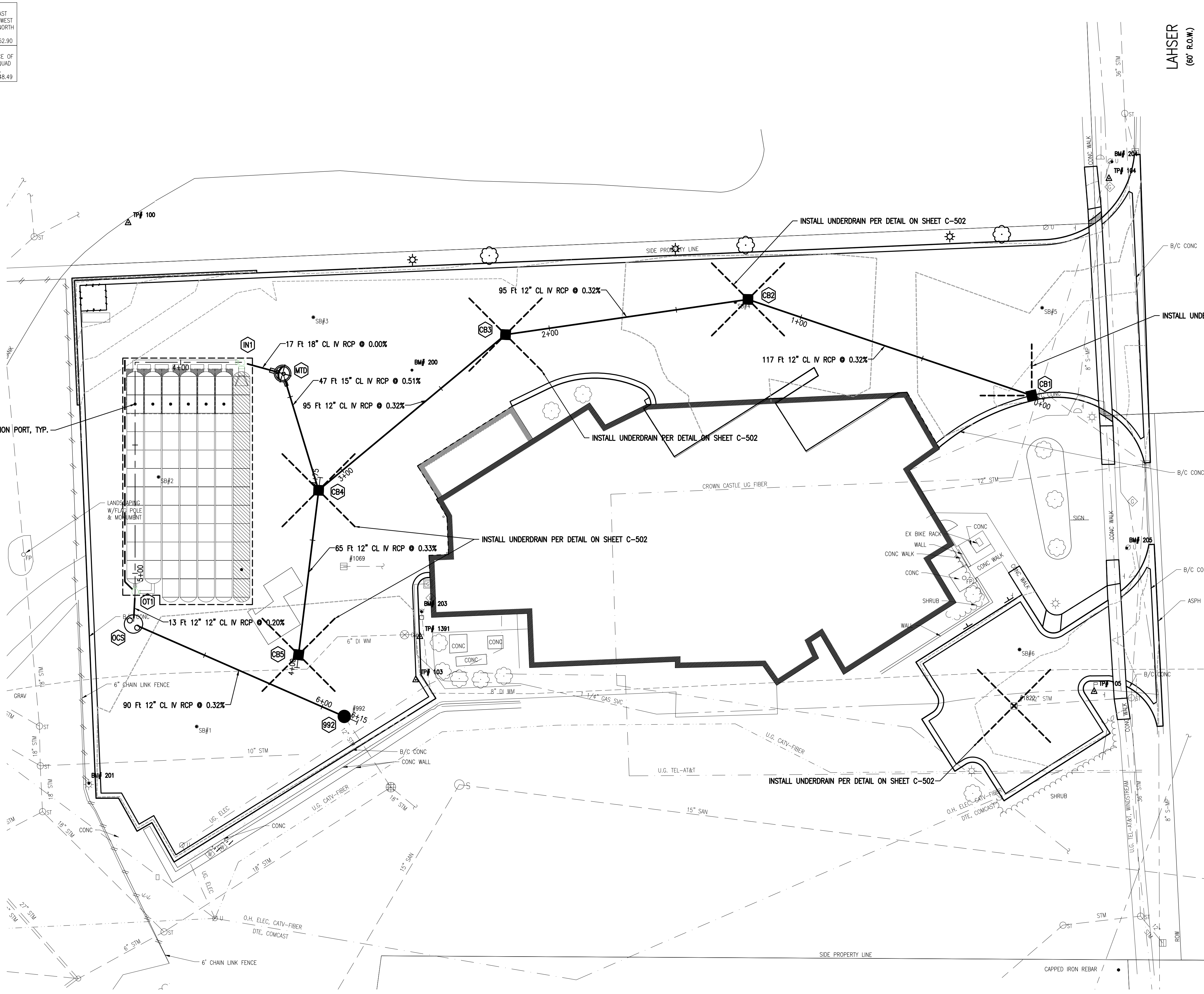
**GRADING PLAN**

**C-141**

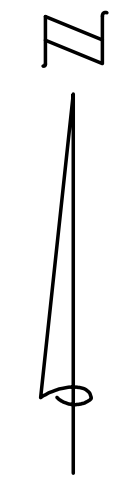
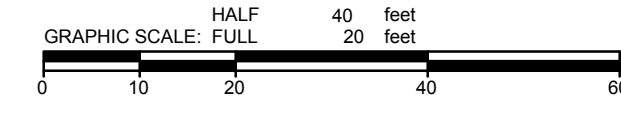
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JOB BENCHMARK #204 SET COTTON SPINDLE IN SOUTH EAST FACE TELEPHONE POLE IN NORTH WEST QUAD LASHER AND FIRE STATION NORTH DRIVEWAY. ELEV 652.90	
JOB BENCHMARK #205 SET COTTON SPINDLE IN WEST FACE OF TELEPHONE POLE IN NORTHWEST QUAD LASHER AND SOUTH LOT DRIVEWAY. ELEV 648.49	
TRAVERSE POINT #100 N 354963.31 E 13421346.59	ELEV 657.87
TRAVERSE POINT #101 N 354788.40 E 13421251.98	ELEV 658.18
TRAVERSE POINT #102 N 354646.67 E 13421082.87	ELEV 657.81
TRAVERSE POINT #103 N 354785.19 E 13421458.64	ELEV 649.60
TRAVERSE POINT #104 N 354980.53 E 13421728.78	ELEV 652.00
TRAVERSE POINT #105 N 354780.67 E 13421723.02	ELEV 647.58



LAHSER  
(60' R.O.W.)



- CB1 STA 0+05.00, 0.0' R  
24" CATCH BASIN W/2' SUMP & COVER EJW 1040M1  
T/CAST 648.40  
12" INV W 644.40
- CB2 STA 1+21.76, 0.0'  
48" CATCH BASIN W/2' SUMP & COVER EJW 1040M1  
T/CAST 649.00  
12" INV E 644.03  
12" INV W 643.93
- CB3 STA 2+17.23, 0.0'  
48" CATCH BASIN W/2' SUMP & COVER EJW 1040M1  
T/CAST 650.21  
12" INV E 643.62  
12" INV SW 643.52
- CB4 STA 3+11.99, 0.0'  
48" CATCH BASIN W/2' SUMP & COVER EJW 1040M1  
T/CAST 650.00  
12" INV NE 643.22  
15" INV N 643.12  
12" INV S 644.79
- MTD STA 3+59.48, 0.0'  
MANUFACTURED TREATMENT DEVICE  
T/CAST 650.58  
15" INV S 642.88  
18" INV W 642.78
- CB5 STA 4+05.00, 0.0'  
24" CATCH BASIN W/2' SUMP & COVER EJW 1040M1  
T/CAST 649.00  
12" INV N 645.00
- INI STA 3+76.26, 0.0'  
DETENTION INLET  
T/CAST 650.67  
18" INV E 642.78  
18" INV W 641.15
- OT1 STA 5+07.27, 0.0'  
DETENTION OUTLET  
T/CAST 650.54  
48" INV N 641.10  
12" INV S 641.11
- OCS STA 5+19.79, 0.0'  
OUTLET CONTROL STRUCTURE  
T/CAST 650.15  
12" INV SE 641.08  
12" INV N 641.08
- 992 STA 6+09.46, 0.0' R  
48" STORM MANHOLE W/MDOT COVER B  
T/CAST 649.40  
12" INV NW 640.79  
12" INV SE 640.69



ISSUED FOR:	PLANS FOR BIDDING	DATE
REVISION	DESCRIPTION	

PROJECT NUMBER: 0153-23-0180  
 CITY OF SOUTHFIELD  
 SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
 OAKLAND COUNTY  
 UTILITY PLAN



Know what's below.  
Call before you dig.

**1** FIRE STATION #5  
24477 LAHSER, SOUTHFIELD

C-150

DRAWING PATH: P:\0125\_0153\0153-23-0180\_Fire Stations 4 & 5\_Paving Imp\Drawings\Civil\Plans\_Comet\230180CON-UTIL.dwg Apr 02, 2024 - 3:40pm

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JOB BENCHMARK #204  
SET COTTON SPINDLE IN SOUTH EAST  
FACE TELEPHONE POLE IN NORTH WEST  
QUAD LASHER AND FIRE STATION NORTH  
DRIVEWAY.  
ELEV 652.90

JOB BENCHMARK #205  
SET COTTON SPINDLE IN WEST FACE OF  
TELEPHONE POLE IN NORTHWEST QUAD  
LASHER AND SOUTH LOT DRIVEWAY.  
ELEV 648.49

TRAVERSE POINT #100  
N 354963.31  
E 13421346.59 ELEV 657.87

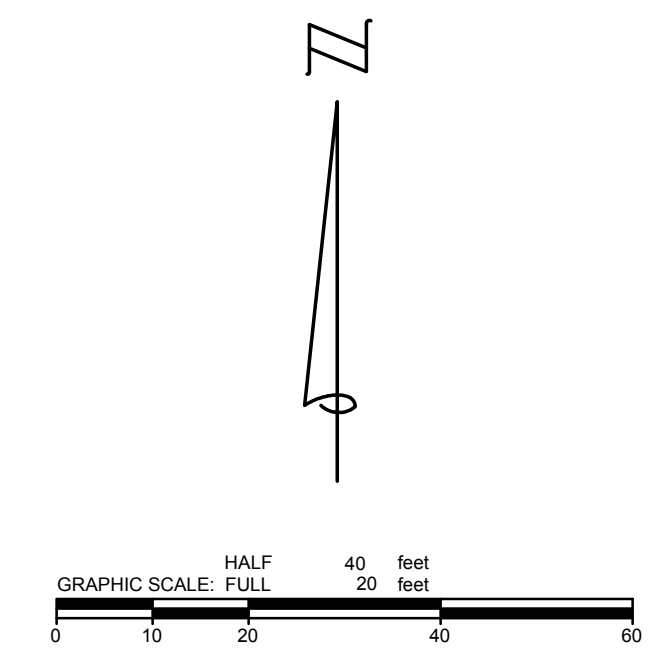
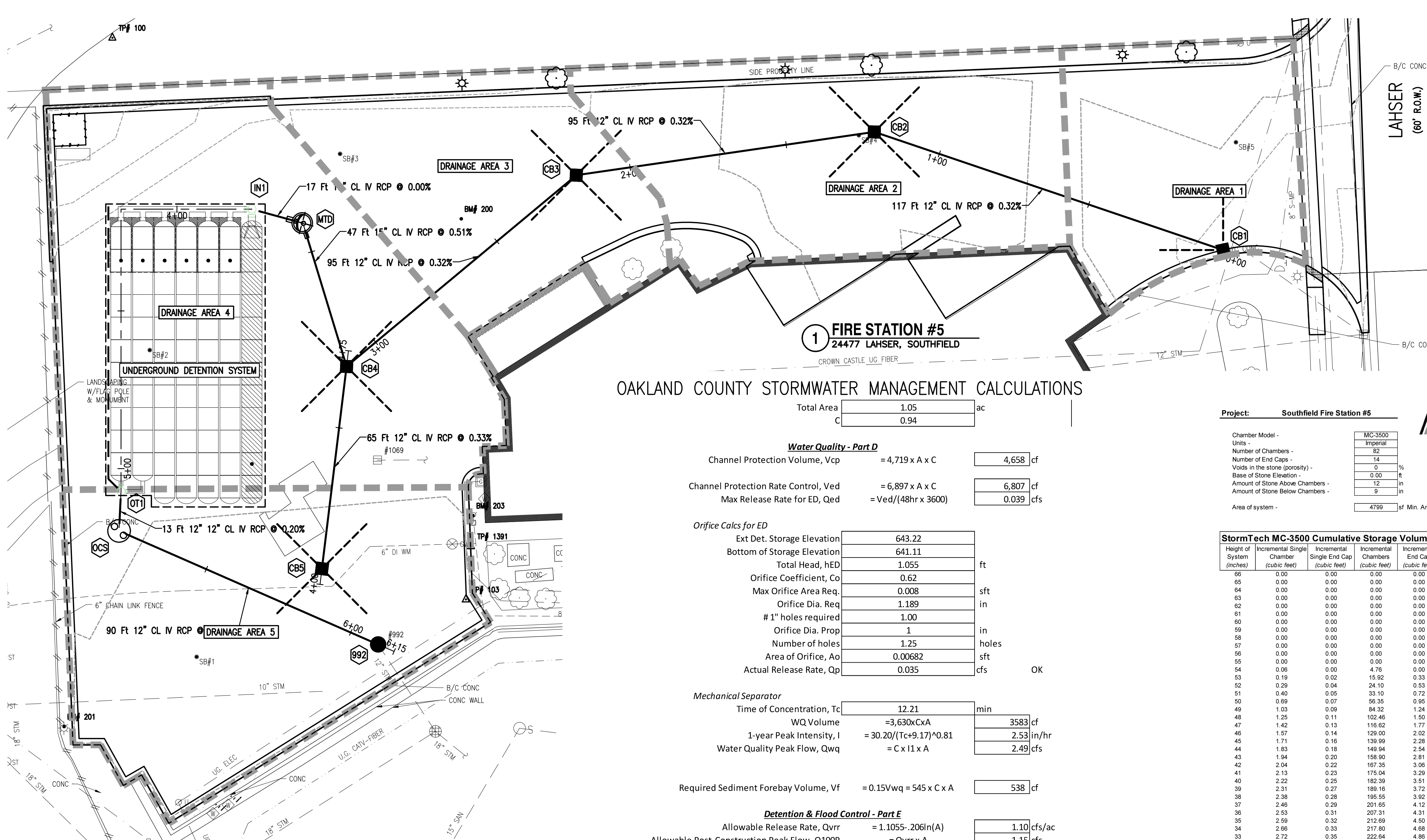
TRAVERSE POINT #101  
N 354785.40  
E 13421251.98 ELEV 658.18

TRAVERSE POINT #102  
N 354646.67  
E 13421082.87 ELEV 657.81

TRAVERSE POINT #103  
N 354785.19  
E 13421458.64 ELEV 649.60

TRAVERSE POINT #104  
N 354980.53  
E 13421728.78 ELEV 652.00

TRAVERSE POINT #105  
N 354780.67  
E 13421723.02 ELEV 647.58



### OAKLAND COUNTY STORMWATER MANAGEMENT CALCULATIONS

Total Area  ac  
C

**Water Quality - Part D**

Channel Protection Volume, Vcp = 4,719 x A x C  cf

Channel Protection Rate Control, Ved = 6,897 x A x C  cf

Max Release Rate for ED, Qed = Ved/(48hr x 3600)  cfs

**Orifice Calcs for ED**

Ext Det. Storage Elevation	643.22
Bottom of Storage Elevation	641.11
Total Head, hED	1.055
Orifice Coefficient, Co	0.62
Max Orifice Area Req.	0.008
Orifice Dia. Req.	1.189
# 1" holes required	1.00
Orifice Dia. Prop.	1
Number of holes	1.25
Area of Orifice, Ao	0.00682
Actual Release Rate, Qp	0.035

OK

**Mechanical Separator**

Time of Concentration, Tc	12.21	min
WQ Volume	= 3,630 x C x A	<input type="text" value="3583"/> cf
1-year Peak Intensity, I	= 30.20 / (Tc + 9.17)^0.81	<input type="text" value="2.53"/> in/hr
Water Quality Peak Flow, Qwq	= C x I x A	<input type="text" value="2.49"/> cfs

Required Sediment Forebay Volume, Vf = 0.15Vwq = 545 x C x A  cf

**Detention & Flood Control - Part E**

Allowable Release Rate, Qvrr	= 1.1055 - .206ln(A)	<input type="text" value="1.10"/> cfs/af
Allowable Post-Construction Peak Flow, Q100P	= Qvrr x A	<input type="text" value="1.15"/> cfs
100-year Runoff Volume, V100R	= 18985 x C x A	<input type="text" value="18,738"/> cf
100-year Peak Intensity, I	= 83.3 / (Tc + 9.17)^0.81	<input type="text" value="7.62"/> cfs
100-year Peak Inflow Rate, Q100I	= C x I x 100 x A	<input type="text" value="7.52"/> cfs
100-year Storage Curve Factor, R	= 0.206 - 0.15ln(Q100P/Q100I)	<input type="text" value="0.49"/>
Required 100-year Volume, V100D	= (V100R x R) - Vcp	<input type="text" value="4,479"/> cf
Required 100-year Volume, V100D, no RET	= V100R x R	<input type="text" value="9,136"/> cf

**Orifice Calcs for DET**

100-year Storage Elevation	644.47
Ext Det. Storage Elevation	643.22
Total Head, h100	1.25
Orifice Coefficient, Co	0.62
Qadj	1.12
Max Orifice Area Req.	0.201
Orifice Dia. Req.	6.063
Orifice Dia. Prop.	6
Number of holes	1
Area of Orifice, Ao	0.20
Actual Release Rate, Qp	1.092

OK

### CONVEYANCE CALCULATIONS

RUNOFF FROM DSN PT	RUNOFF TO DSN PT	INCRE. AREA (ACRES)	IMPERVIOUS FACTOR "C"	EQUIV. AREA (d x e)	CUMULATIVE EQUIV. AREA	TIME OF CONCENT. (minutes)	RAINFALL RATE (in/hr)	QUANTITY OF RUNOFF (c.f./s)	ENTERING RUNOFF (d x e)	PIPE LENGTH (feet)	PIPE DIA. (inches)	PIPE ROUGHNESS	PIPE SLOPE (%)	PIPE SLOPE CHECK	SLOPE OF H.G. (%)	TIME TO NEXT M.H. (minutes)	TOTAL RUNOFF	DISCHARGE Q (FULL) (c.f./s)	VELOCITY V (FULL) (ft./sec)	UPPER INVERT (feet)	LOWER INVERT (feet)	8/10 MARK (feet)	LOWER H.G.L. (feet)	LOWER GROUND (feet)	UPPER H.G.L. (feet)	UPPER GROUND (feet)	DISTANCE FROM HGL TO RIM (feet)	COVER OVER PIPE (feet)
CB1	CB2	0.12	0.95	0.11	0.11	10.0	4.58	0.52		117	12	0.013	0.32%	0.32%	0.02%	0.76	0.52	2.02	2.57	644.4	644.03	644.83	645.12	649	645.14	648.4	3.26	3
CB2	CB3	0.20	0.93	0.19	0.30	10.76	4.44	1.33		95	12	0.013	0.32%	0.32%	0.14%	0.62	1.33	2.02	2.57	643.93	643.62	644.42	644.98	650.21	645.12	649	3.88	4.0744
CB3	CB4	0.16	0.92	0.15	0.45	11.38	4.33	1.94		95	12	0.013	0.32%	0.32%	0.30%	0.62	1.94	2.02	2.57	643.52	643.22	644.02	644.70	650	644.98	650.21	5.23	5.6884
CB4	MTD	0.33	0.95	0.31	0.98	12	4.23	4.14	0.22	47	15	0.013	0.50%	0.50%	0.41%	0.21	4.36	4.57	3.72	643.12	642.88	643.88	644.51	650.58	644.70	650	5.30	5.6324
MTD	DET	0.00	0.00	0.00	1.20	12.21	4.19	5.02	0.22	17	18	0.013	0.01%	0.01%	0.23%	0.48	5.24	1.05	0.59	642.78	642.78	643.98	644.47	650.67	644.51	650.58	6.07	6.2974
DET	OCS	0.00	0.00	0.00	1.42	12.69	4.12	5.83	0.22	13	45	0.013	0.01%	0.01%	0.00%	0.20	6.05	12.09	1.09	642.78	642.78	645.78	645.78	650.15	645.67	648.4	4.89	4.1387
OCS	992	0.00	0.00	0.00	1.63	12.89	4.09	6.69	0.22	90	12	0.013	0.32%	0.32%	3.52%	0.58	1.13	2.02	2.57	641.08	640.79	641.59	641.59	649.4	644.76	650.15	5.39	8.072
CB5	CB4	0.23	0.95	0.22	0.22	10.0	4.58	1.00		65	12	0.013	0.32%	0.32%	0.08%	0.42	1.00	2.02	2.57	645	644.79	645.59	644.70	650	644.75	649	4.25	3

### DRAINAGE AREA CALCULATIONS

**Proposed Runoff Coefficient (C) - Drainage Area #1**

Area (AC)	C	Weighted C	
Pervious	0.00	0.30	0.00
Impervious	0.12	0.95	0.12
<b>Total</b>	<b>0.12</b>	<b>0.95</b>	

**Proposed Runoff Coefficient (C) - Drainage Area #2**

Area (AC)	C	Weighted C	
Pervious	0.01	0.30	0.00
Impervious	0.20	0.95	0.19
<b>Total</b>	<b>0.20</b>	<b>0.93</b>	

**Proposed Runoff Coefficient (C) - Drainage Area #3**

Area (AC)	C	Weighted C	
Pervious	0.01	0.30	0.00
Impervious	0.15	0.95	0.14
<b>Total</b>	<b>0.16</b>	<b>0.92</b>	

**Proposed Runoff Coefficient (C) - Drainage Area #4**

Area (AC)	C	Weighted C	
Pervious	0.00	0.30	0.00
Impervious	0.33	0.95	0.31
<b>Total</b>	<b>0.33</b>	<b>0.95</b>	

**Proposed Runoff Coefficient (C) - Drainage Area #5**

Area (AC)	C	Weighted C	
Pervious	0.00	0.30	0.00
Impervious	0.23	0.95	0.22
<b>Total</b>	<b>0.23</b>	<b>0.95</b>	

### DRAINAGE AREA SUMMARY

**PROPOSED DRAINAGE AREA SUMMARY**

DRAINAGE AREA	AREA (AC)	C-FACTOR	A x C
1	0.12	0.95	0.12
2	0.20	0.93	0.19
3	0.16	0.92	0.15
4	0.33	0.95	0.31
5	0.23	0.95	0.22
<b>Total</b>	<b>1.05</b>		<b>0.99</b>
<b>Computed C:</b>	<b>0.94</b>		

ISSUED FOR:	PLANS FOR BIDDING	DATE
REVISION	DESCRIPTION	

PROJECT NUMBER: 0153-23-0180  
DATE: 4/2/24

CITY OF SOUTHFIELD  
SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
OAKLAND COUNTY

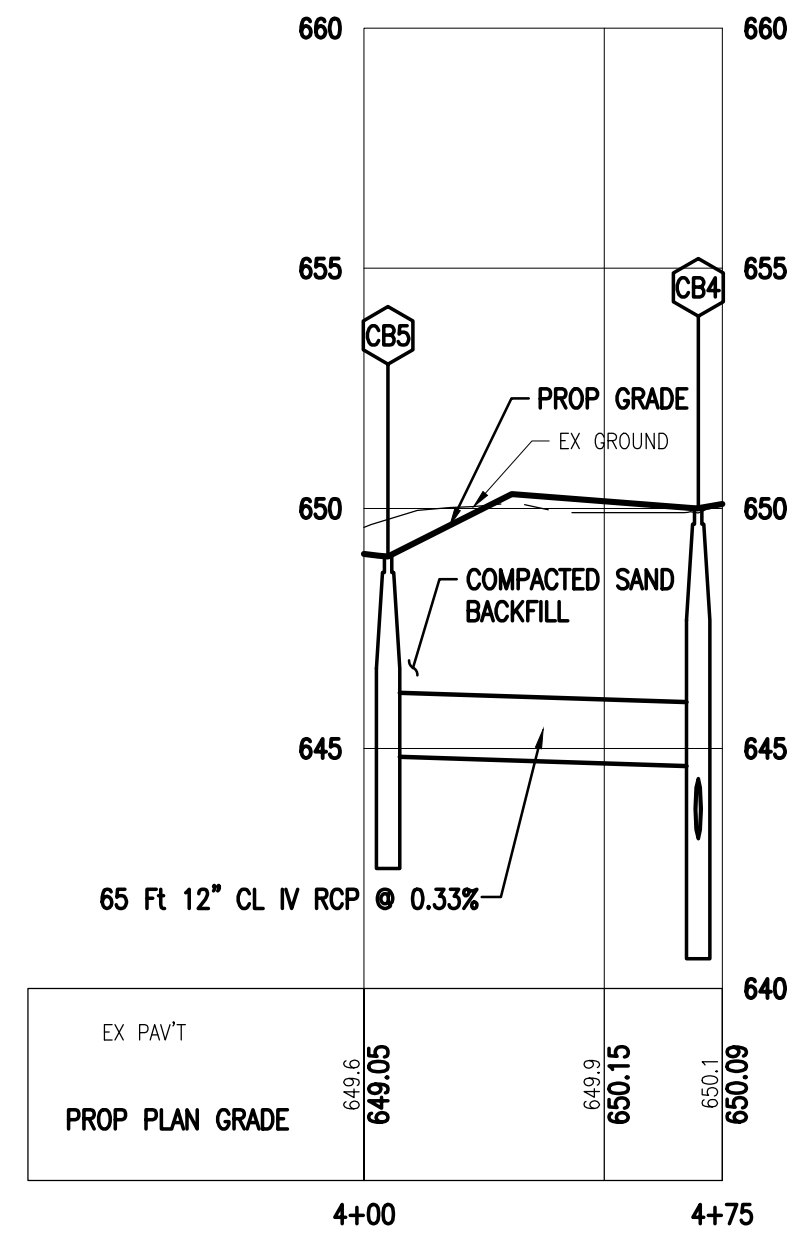
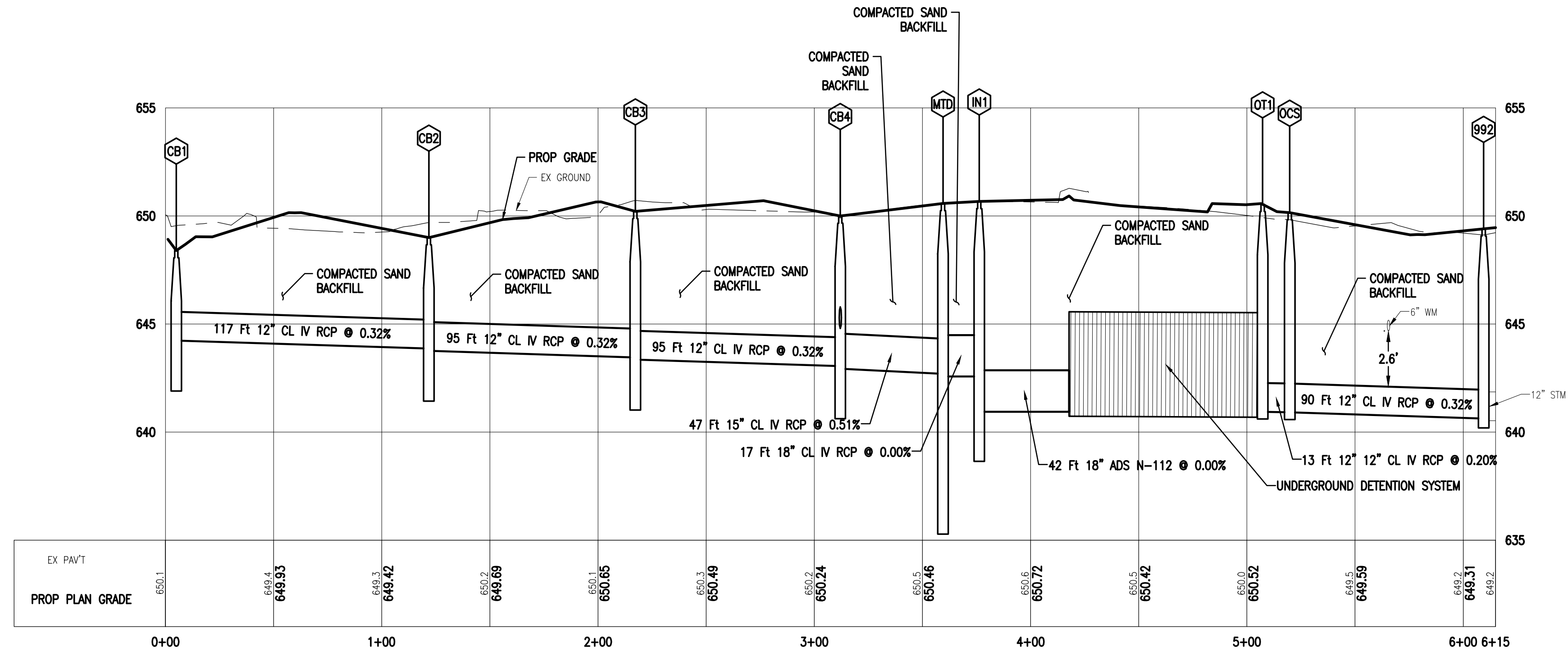
STORMWATER MANAGEMENT CALCULATIONS



C-152

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- CB1 STA 0+05.00, 0.0' R  
 24" CATCH BASIN W/2' SUMP & COVER EJW 1040M1  
 T/CAST 648.40  
 12" INV W 644.40
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 48" CATCH BASIN W/2' SUMP & COVER EJW 1040M1  
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 12" INV E 644.03  
 12" INV W 643.93
- CB3 STA 2+17.23, 0.0'  
 48" CATCH BASIN W/2' SUMP & COVER EJW 1040M1  
 T/CAST 650.21  
 12" INV E 643.62  
 12" INV SW 643.52
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 OUTLET CONTROL STRUCTURE  
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PROJECT NUMBER: 0153-23-0180  
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 CITY OF SOUTHFIELD  
 SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
 OAKLAND COUNTY  
 STORM SEWER PROFILES

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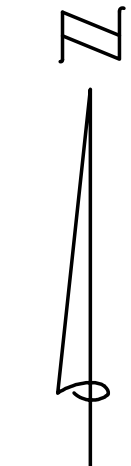
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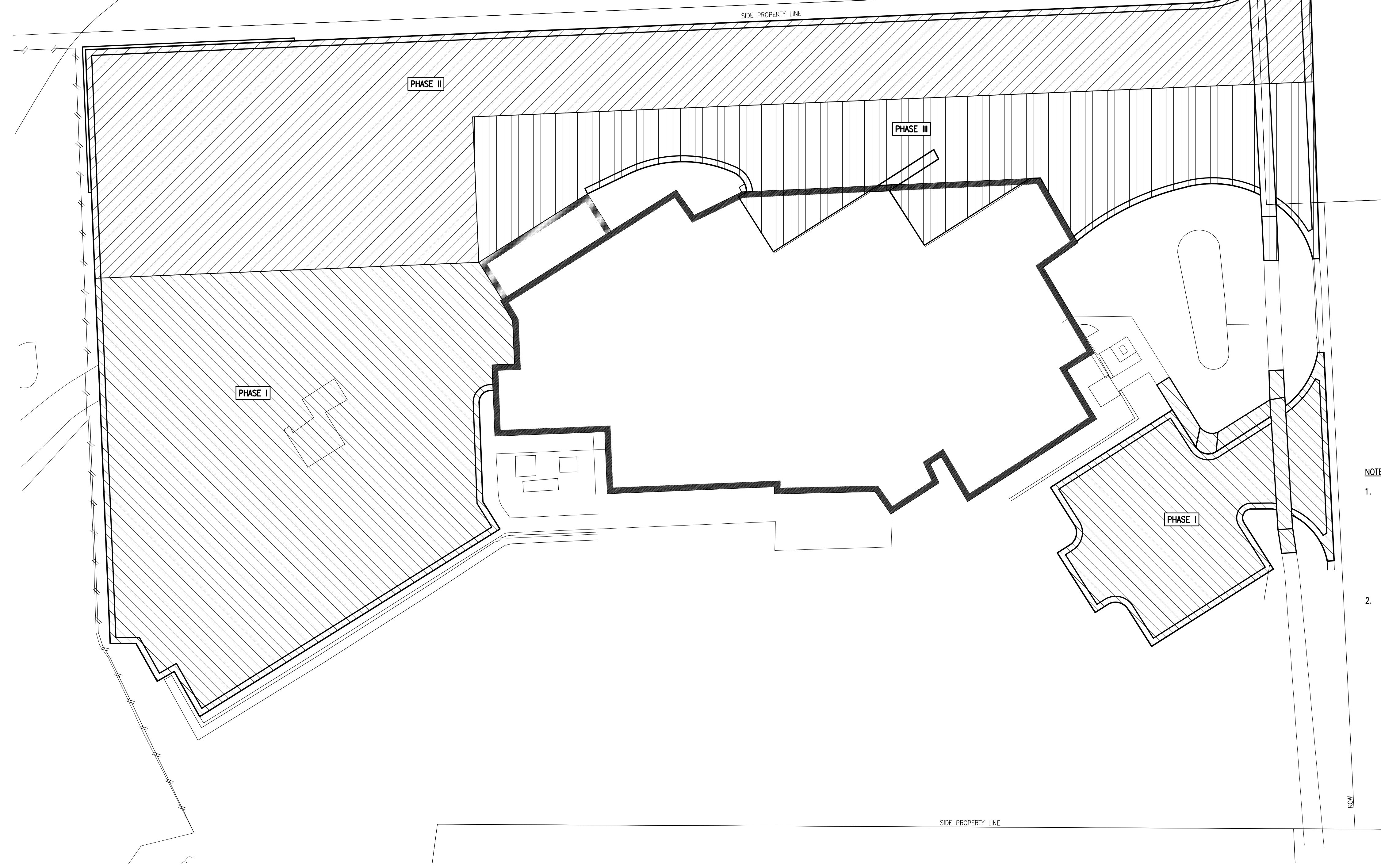
TRAVERSE POINT #103  
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TRAVERSE POINT #104  
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 E 13421728.78 ELEV 652.00

TRAVERSE POINT #105  
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 E 13421723.02 ELEV 647.58



LAHSER  
 (60' R.O.W.)



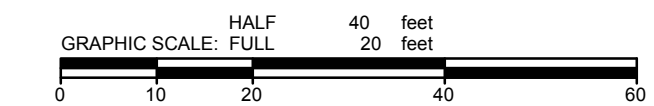
**LEGEND**

- STAGING - PHASE I
- STAGING - PHASE II
- STAGING - PHASE III

**NOTES:**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC TO THE FIRE STATION DURING CONSTRUCTION. AT ANY GIVEN TIME DURING THE CONSTRUCTION AT FIRE STATION #5, AT LEAST ONE OF THE FIRE STATION WELLS SHALL BE OPEN TO TRAFFIC AND ACCESSIBLE FROM LAHSER. IF FOR ANY REASON, ACCESS CANNOT BE MAINTAINED TO THE FIRE STATION, WRITTEN NOTICE SHALL BE GIVEN TO THE OWNER AND THE ENGINEER, A WEEK IN ADVANCE OF THE RESTRICTED ACCESS. PART WIDTH CONSTRUCTION AND COORDINATION REQUIRED TO MAINTAIN ACCESS SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION AND SHALL NOT RESULT IN ANY ADDITIONAL COSTS TO THE PROJECT.
2. CONTRACTOR TO COORDINATE FIRE STATION STAFF PARKING DURING EACH CONSTRUCTION PHASE WITH ADJACENT SCHOOL, NORTH OF THE PROPERTY, SUMMER SCHOOL CLOSING SCHEDULE FROM JUNE 13TH - AUGUST 26TH.

REVISION	DESCRIPTION	DATE



**1 FIRE STATION #5**  
 24477 LAHSER, SOUTHFIELD

PROJECT NUMBER: 0153-23-0180  
 PM: ZAH

**CITY OF SOUTHFIELD**  
**SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS**  
 OAKLAND COUNTY

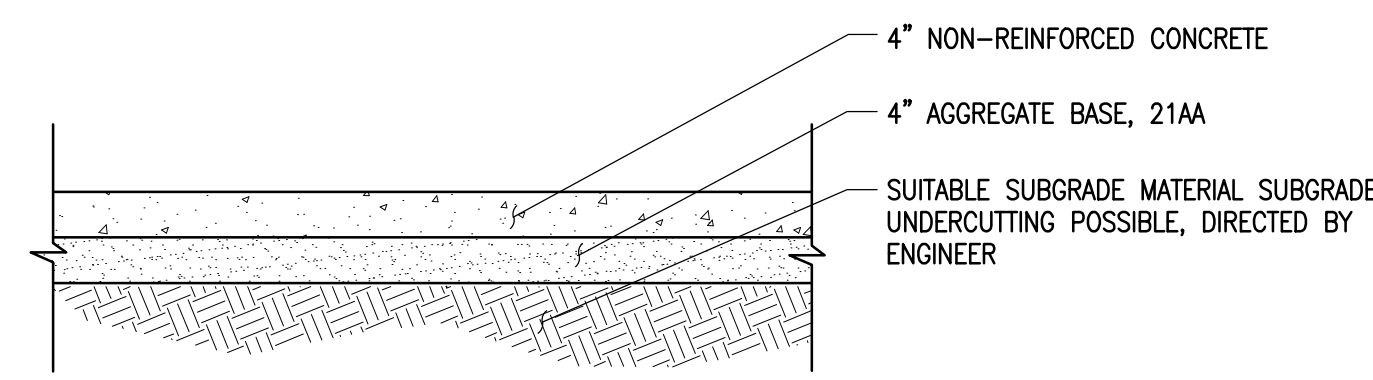
**STAGIN PLAN**

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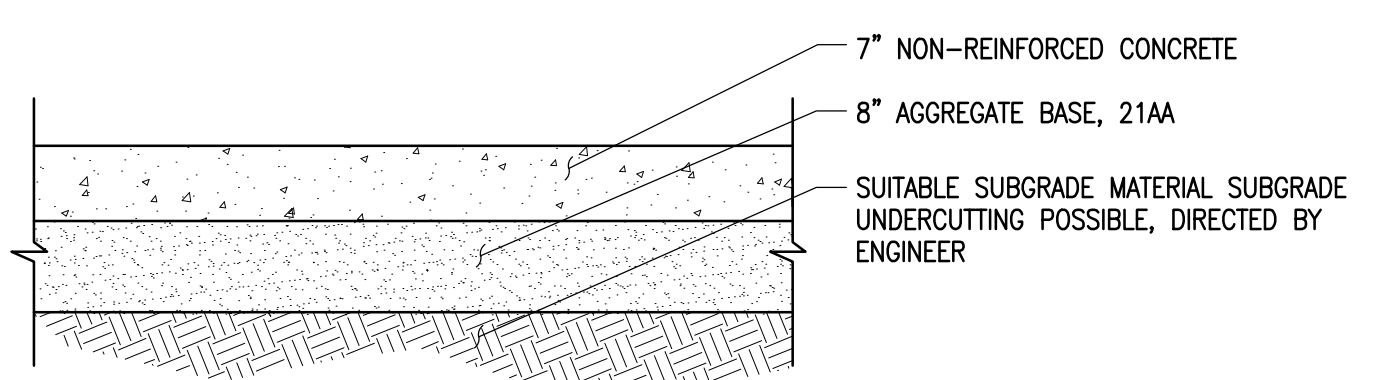
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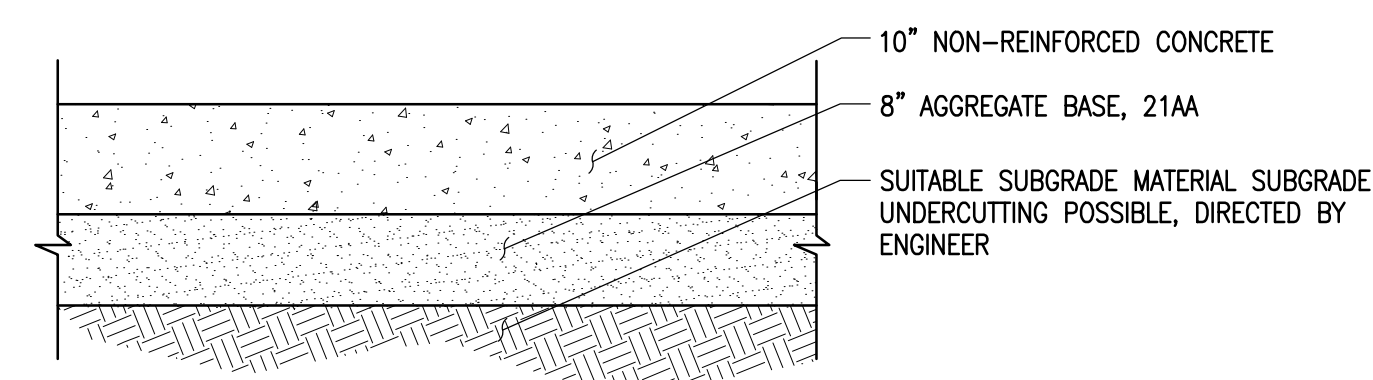




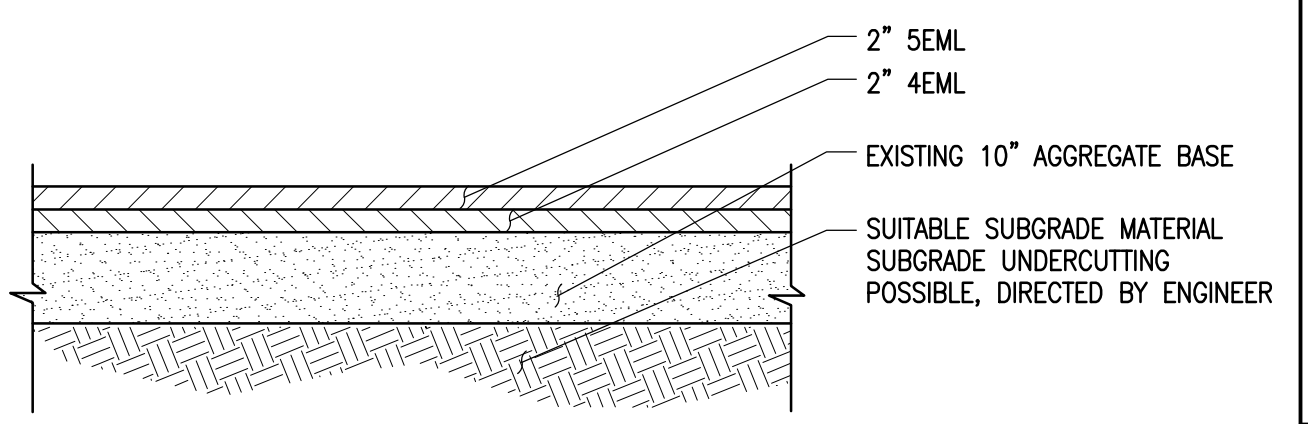
**4" CONCRETE SIDEWALK CROSS-SECTION**  
NOT TO SCALE



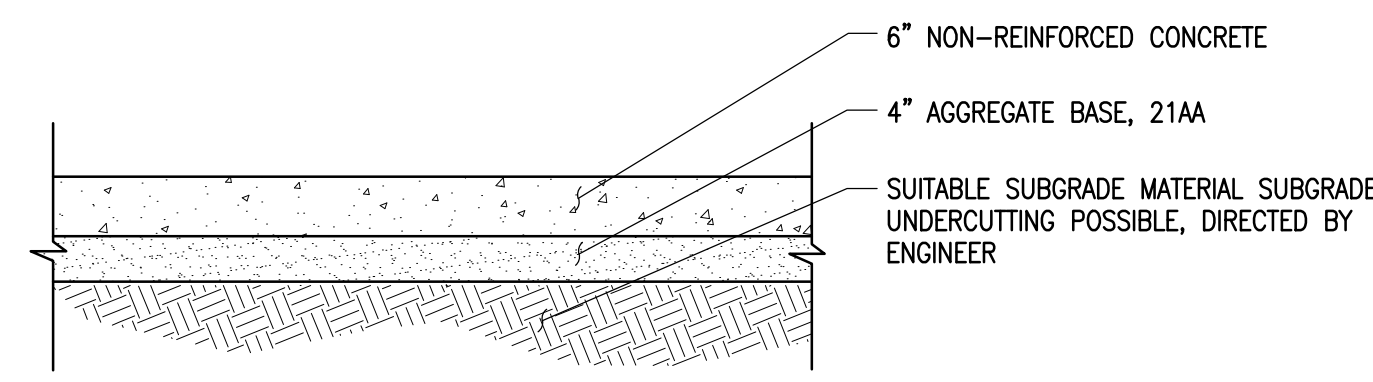
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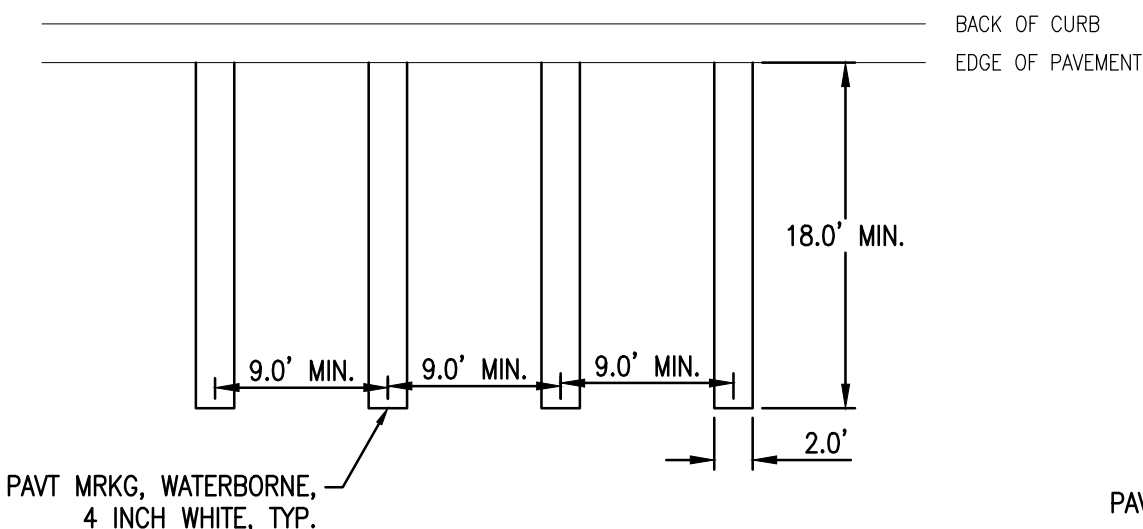
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NOT TO SCALE



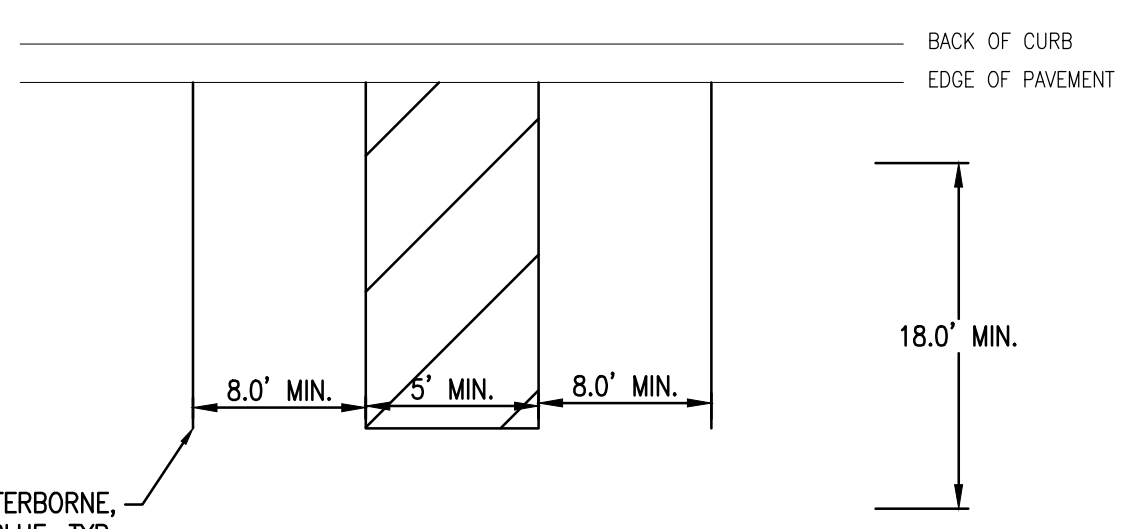
**BITUMINOUS PAVEMENT CROSS-SECTION**  
NOT TO SCALE



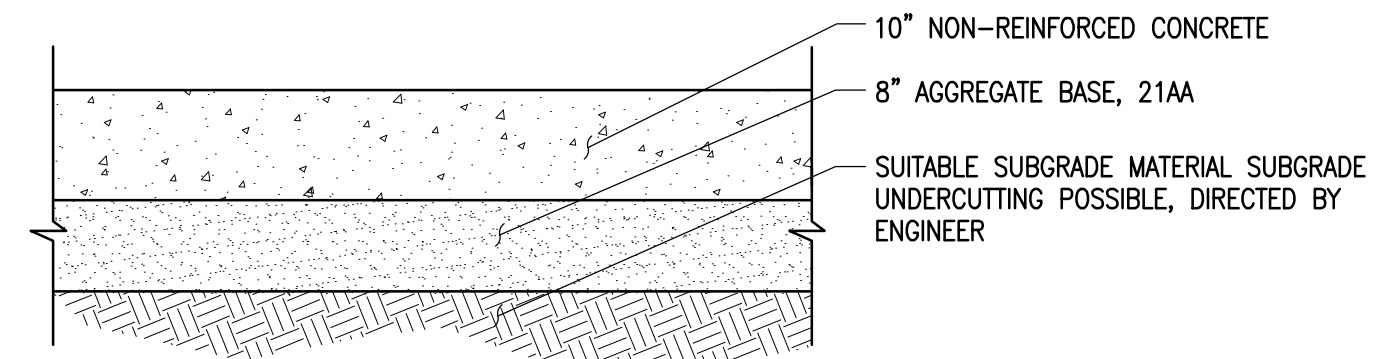
**6" CONCRETE SIDEWALK CROSS-SECTION**  
NOT TO SCALE



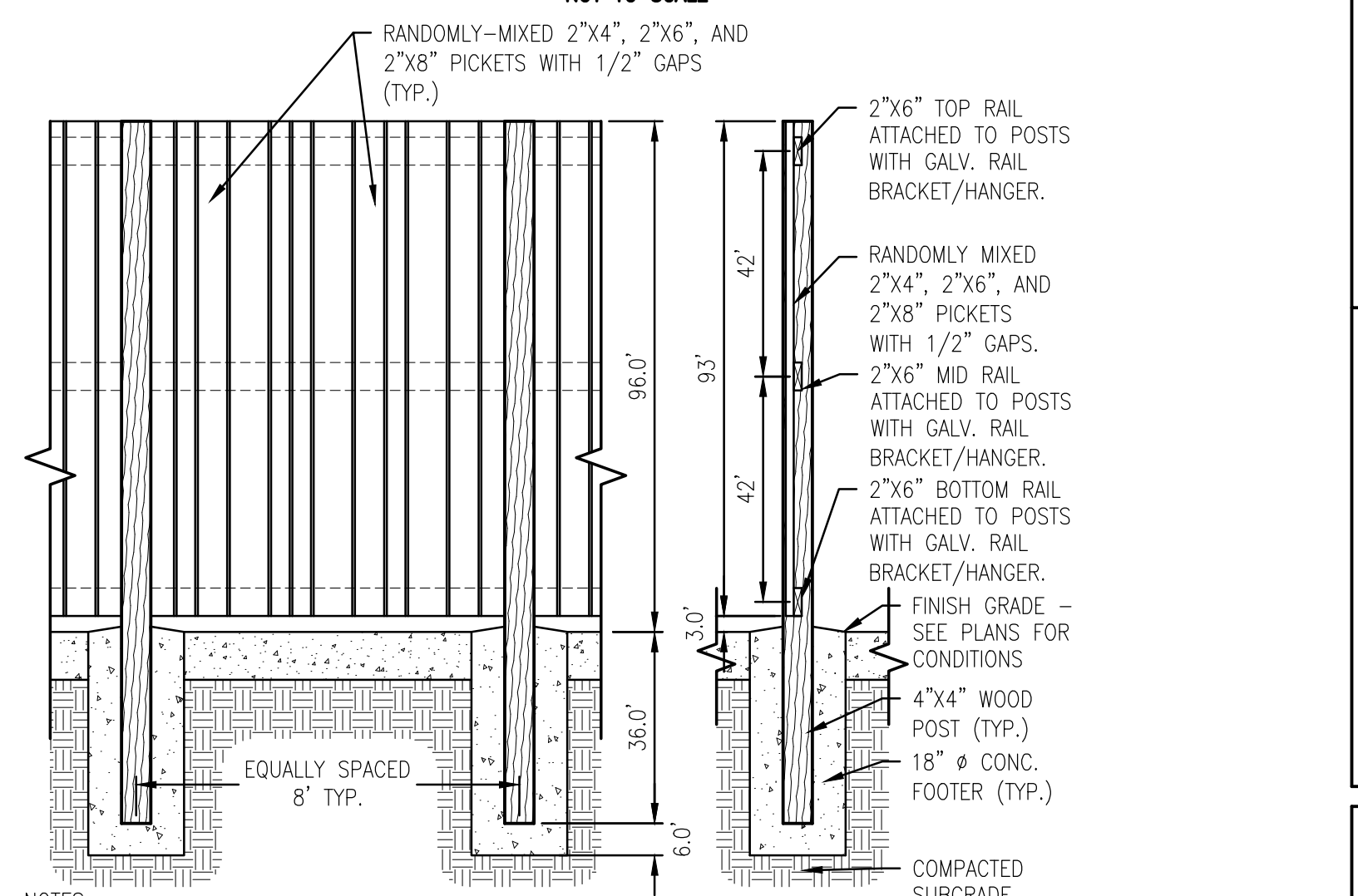
**STANDARD PARKING SPACE STRIPING DETAIL**



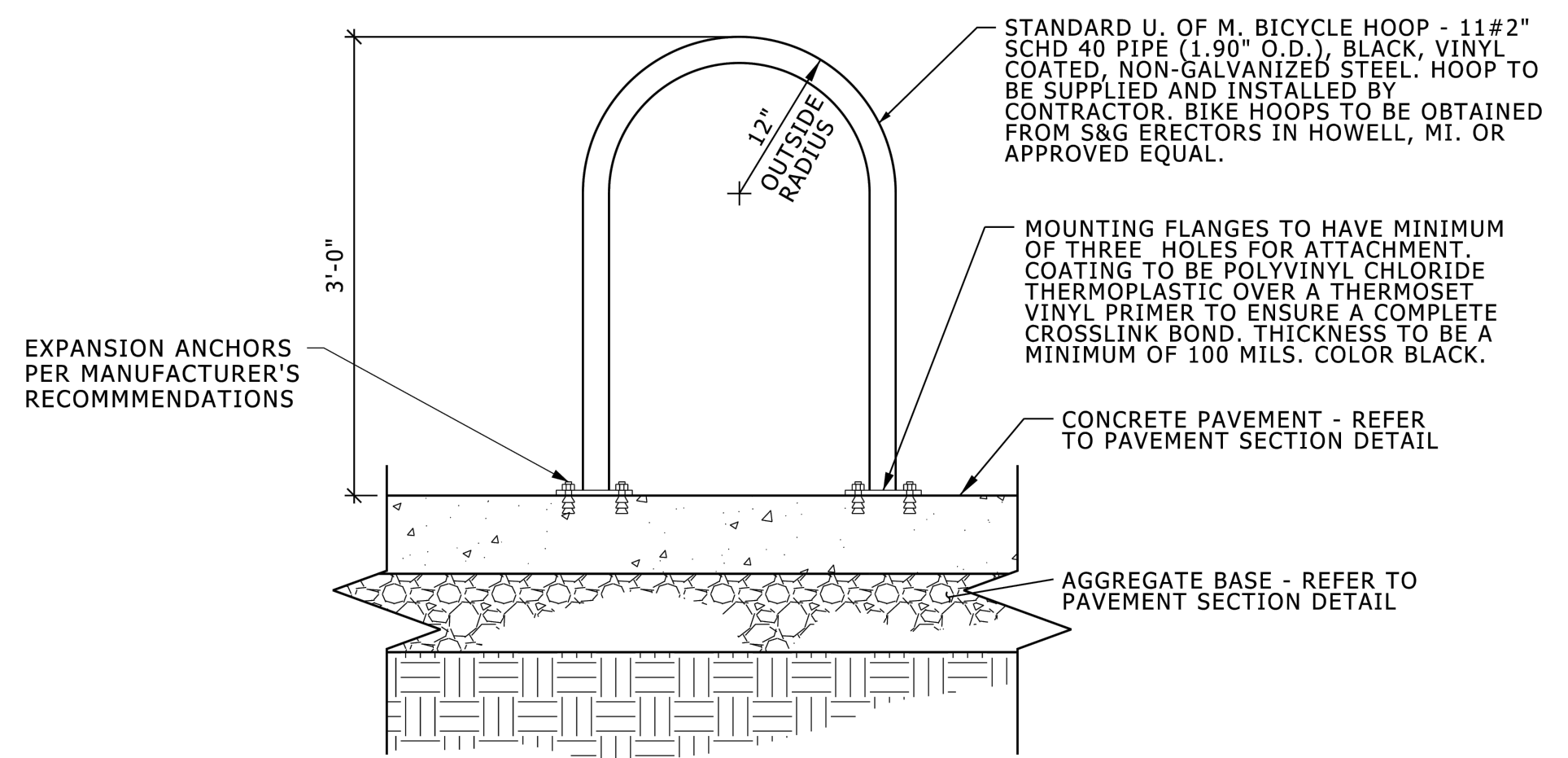
**STANDARD ADA PARKING SPACE STRIPING DETAIL**



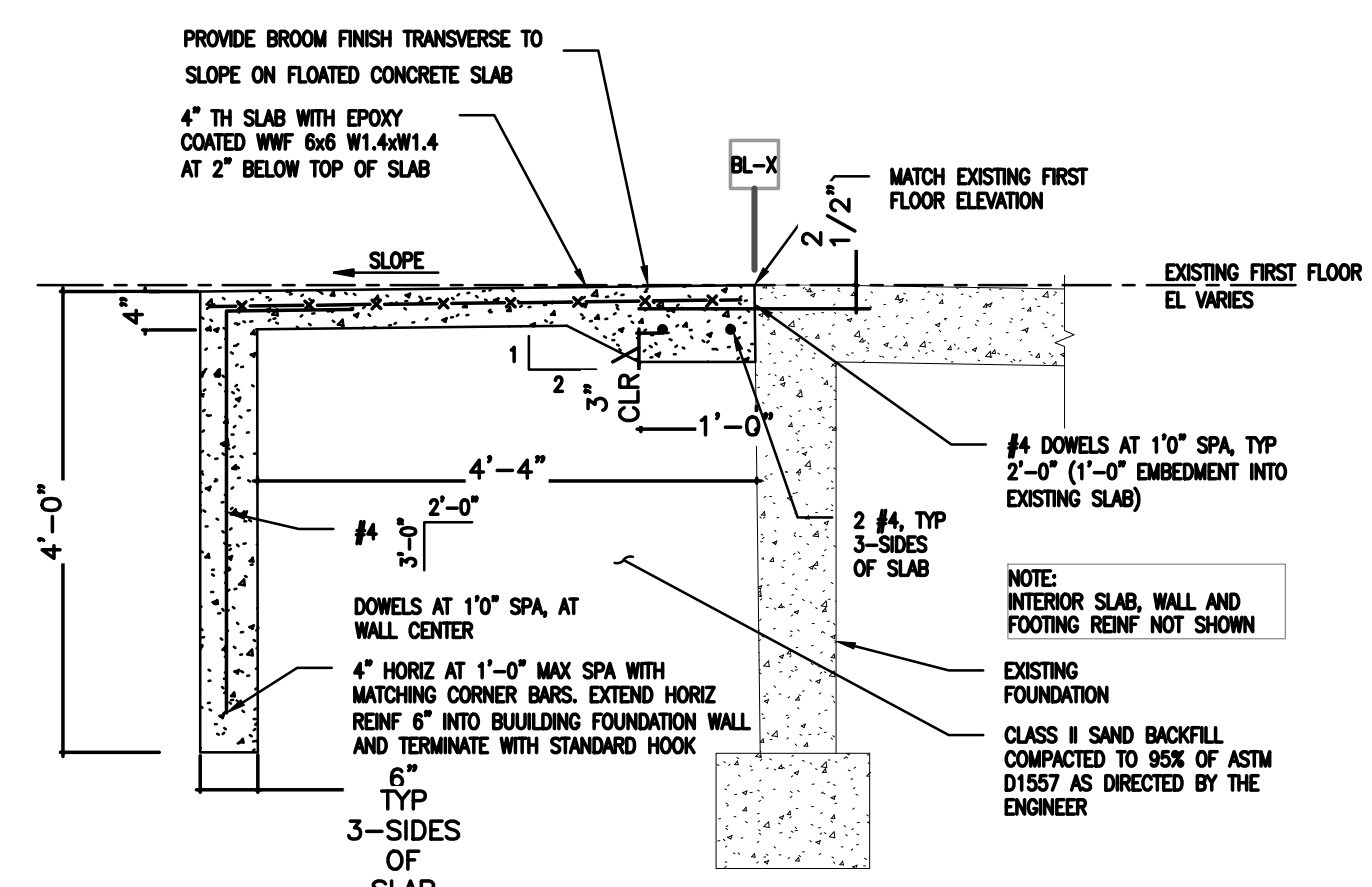
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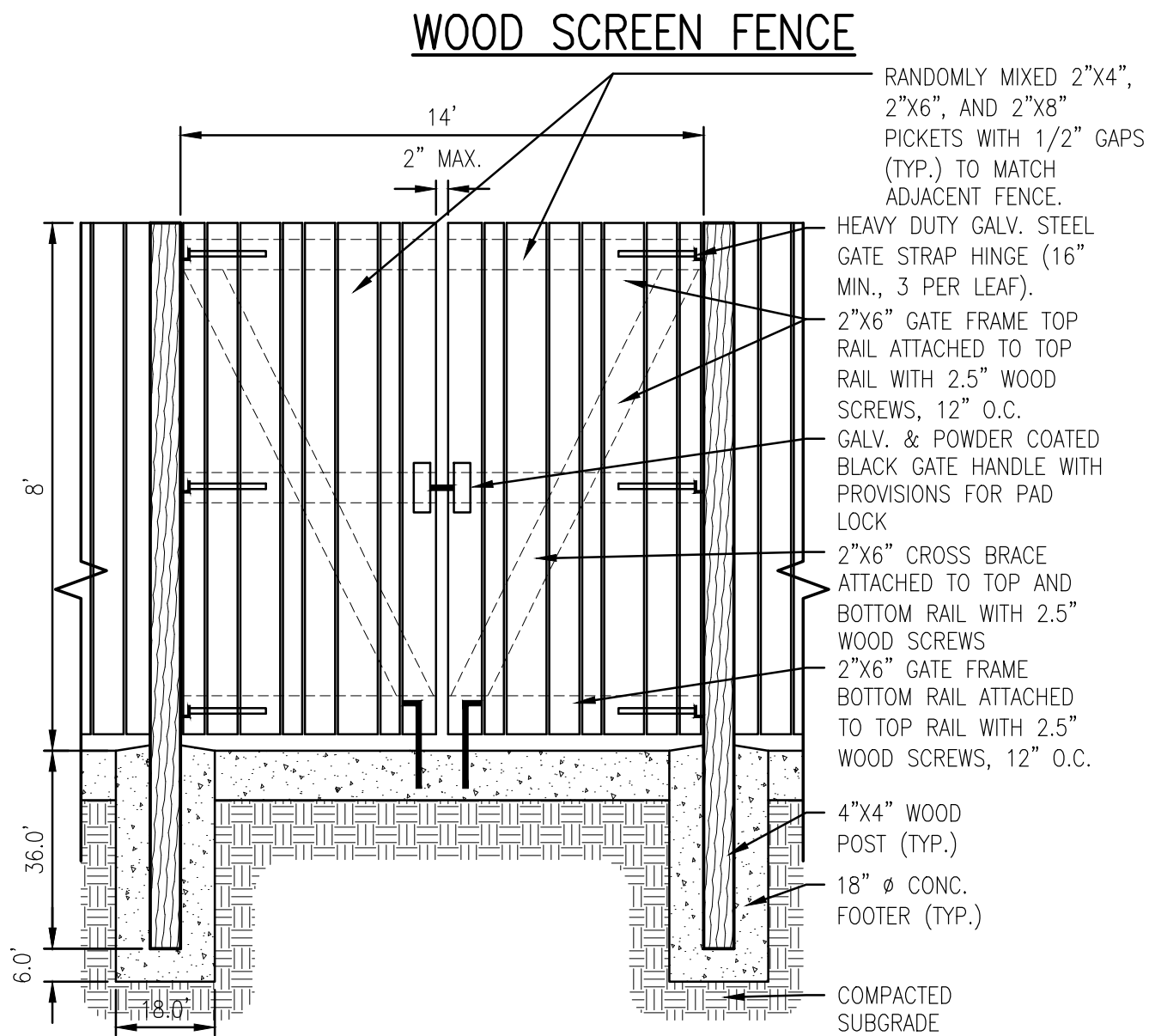
- NOTES:**
1. THIS ITEM WORK SHALL BE PERFORMED IN CONFORMANCE WITH ITEM 607 IN THE CMS.
  2. WOOD RAILS SHALL BE SOUTHERN PINE, NO. 2 OR BETTER, PRESERVATIVE-TREATED FOR ABOVE/BELOW GROUND USE, AND KILN-DRIED AFTER TREATMENT.
  3. WOOD POSTS AND PICKETS SHALL BE ROUGH SAWN WESTERN RED CEDAR, GRADE D OR BETTER. PICKETS SHALL BE FASTENED TO TOP, MID, AND BOTTOM RAIL FROM BACK SIDE OF FENCE WITH 2-1/2" NO. 8 GALVANIZED SCREWS (6 PER PICKET MIN.).
  4. ALL FASTENERS SHALL BE EXTERIOR GRADE.
  5. SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR REVIEW AND APPROVAL.
  6. CONTRACTOR SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THIS ITEM AS SHOWN ON THIS DETAIL.



**BICYCLE HOOP - SURFACE MOUNT**  
NO SCALE



**TYPICAL SUPPORTED SLAB AT MAN DOORS**



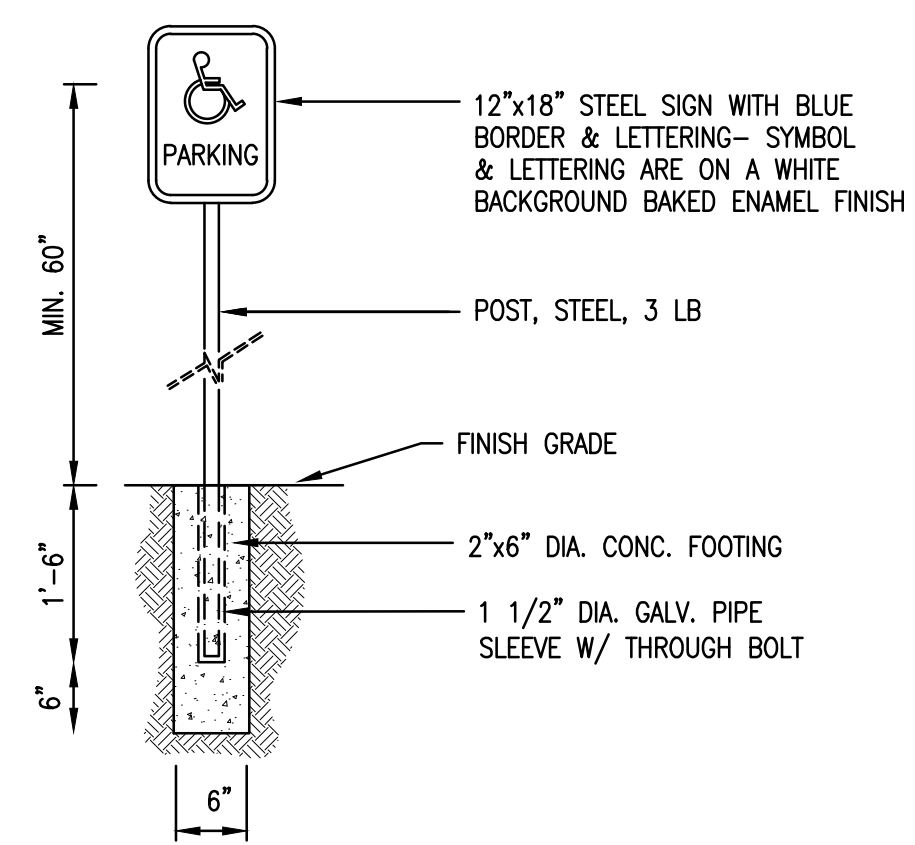
- NOTES:**
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  2. WOOD RAILS SHALL BE SOUTHERN PINE, NO. 2 OR BETTER, PRESERVATIVE-TREATED FOR ABOVE/BELOW GROUND USE, AND KILN-DRIED AFTER TREATMENT.
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  5. SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR REVIEW AND APPROVAL.
  6. CONTRACTOR SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THIS ITEM AS SHOWN ON THIS DETAIL.

**WOOD SCREEN GATE**

HMA APPLICATION ESTIMATE					
MIX TYPE	ITEM DESCRIPTION	RATE OF APPL. LB/SYD	EST THICKNESS (INCHES)	PERFORMANCE GRADE	LOCATION/NOTES
4EML	HMA, 4EML	220	2	64 - 22	BASE COURSE
5EML	HMA, 5EML	220	2	64 - 22	LEVELING COURSE
*HMA BOND COAT SS-1H : 0.05 - 0.10 GAL/SYD					INCLUDED IN COST OF HMA ITEMS

**NOTE:** \* FOR INFORMATION ONLY  
PLACE HMA BOND COAT SS-1H @ 0.10 GAL/SYD BETWEEN EXISTING CURB AND GUTTER OR COLD MILLED PAVEMENT AND PROPOSED HMA SURFACING. ALSO PLACE 0.05 GAL/SYD BETWEEN HMA LIFTS. HMA BOND COAT WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE HMA PAY ITEM BEING PLACED.

**HMA APPLICATION CHART**



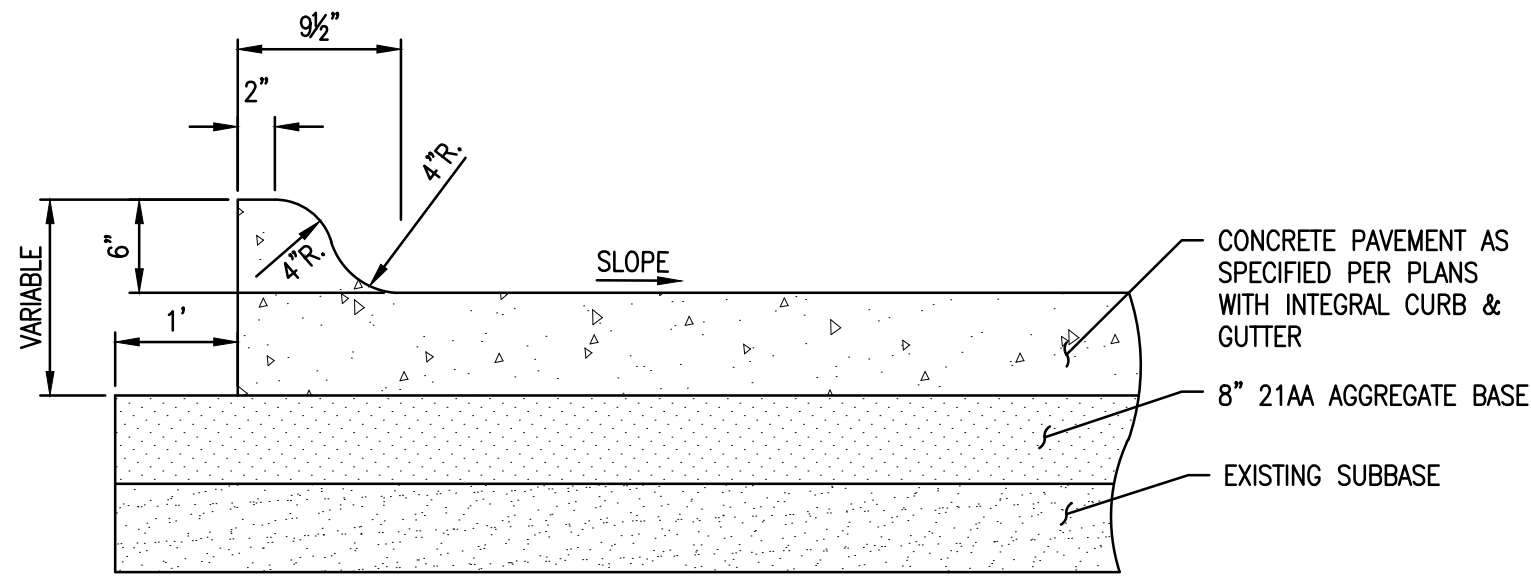
**ACCESSIBLE PARKING SIGN DETAIL**

**DUMPSTER ENCLOSURE DETAIL**

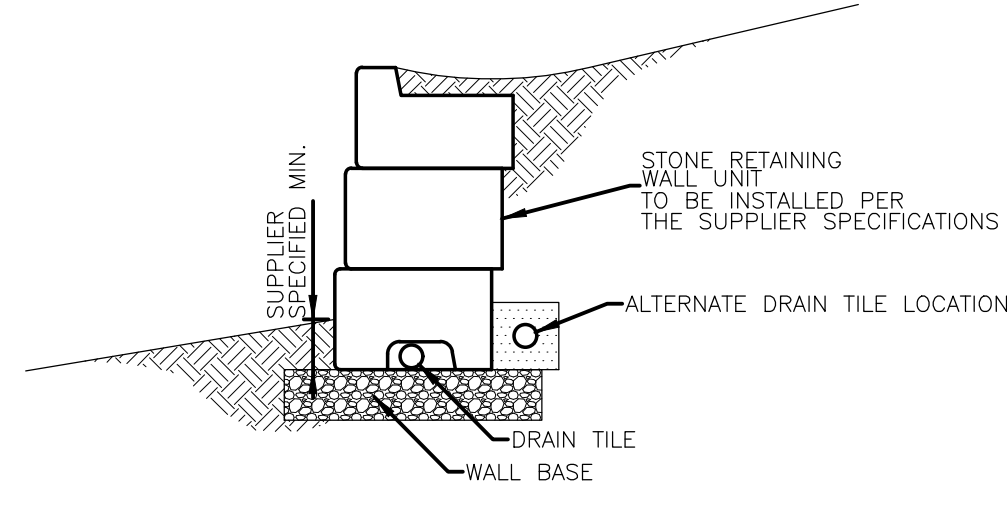
ISSUED FOR: PLANS FOR BIDDING  
REVISION: \_\_\_\_\_  
DATE: 4/2/24

**CITY OF SOUTHFIELD**  
**SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS**  
OAKLAND COUNTY  
**STANDARD DETAILS**

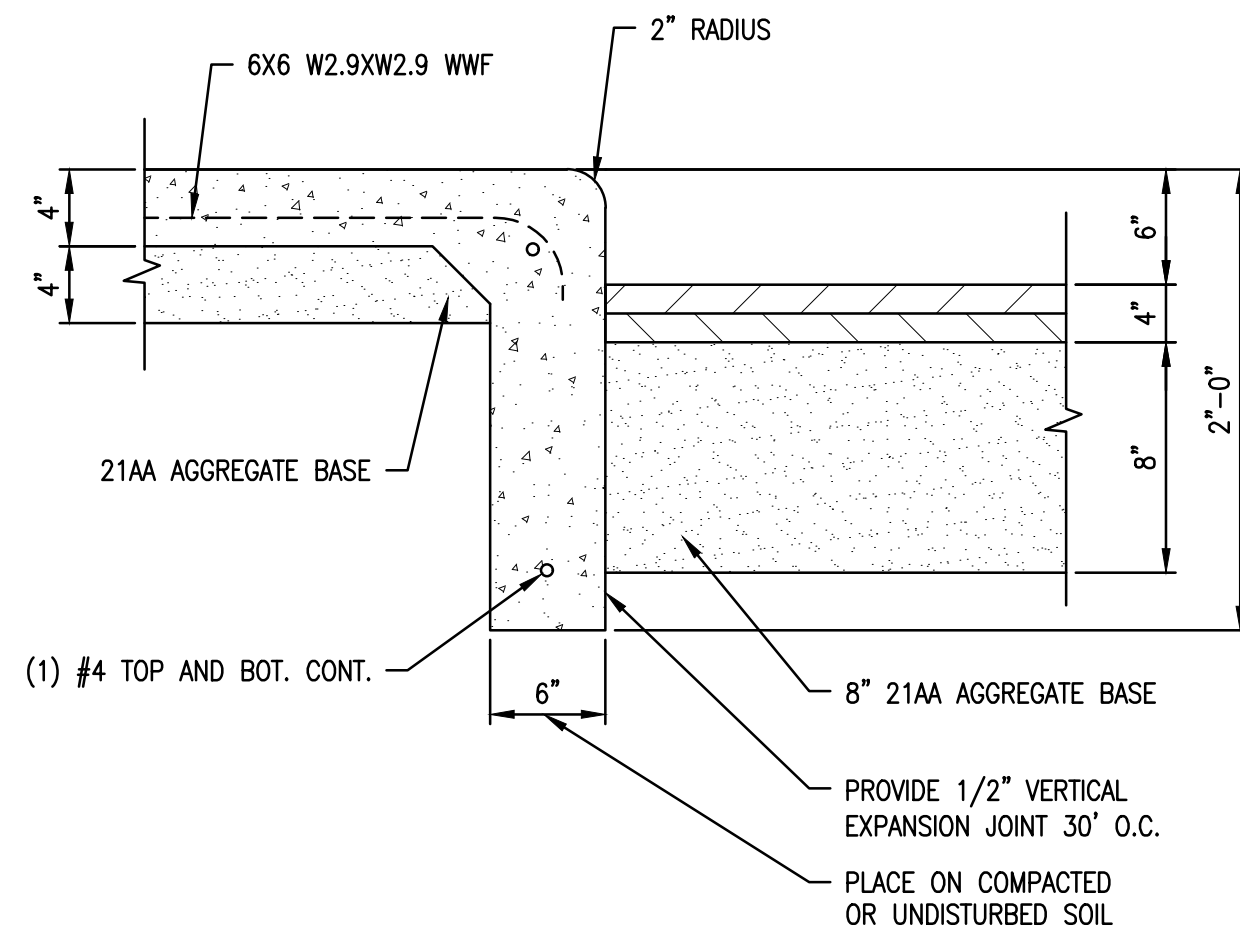
**C-501**



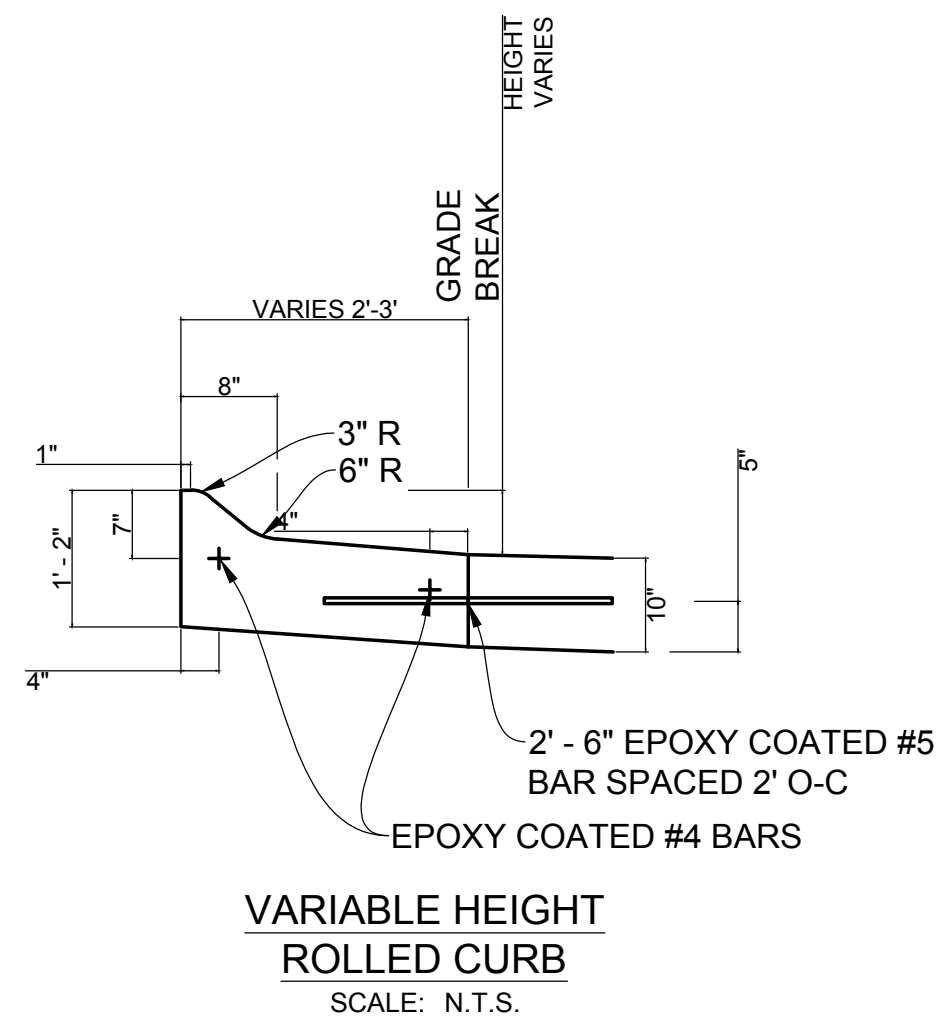
**TYPICAL CONCRETE PAVEMENT WITH INTEGRAL CURB DETAIL**



**WALL CROSS SECTION**  
NOT TO SCALE



**WALK WITH INTEGRAL CURB**



**VARIABLE HEIGHT ROLLED CURB**  
SCALE: N.T.S.

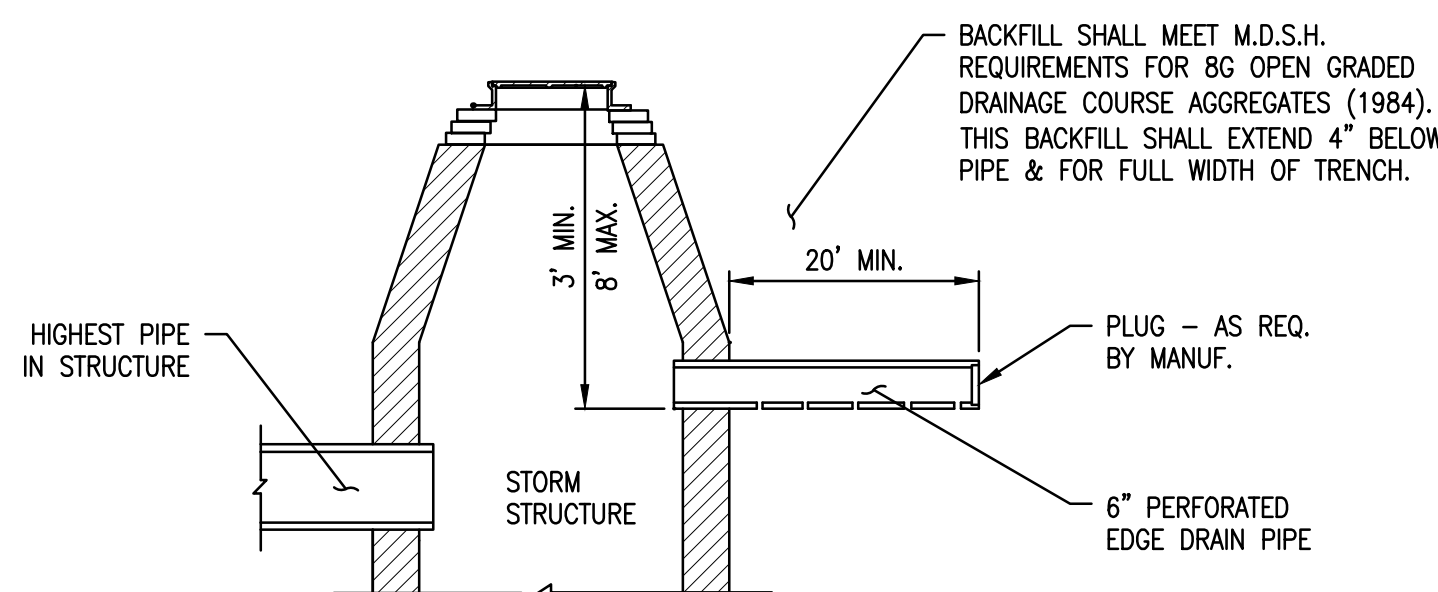
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REVISION	DESCRIPTION		

PROJECT NUMBER: 0153-23-0180  
PM: ZJH

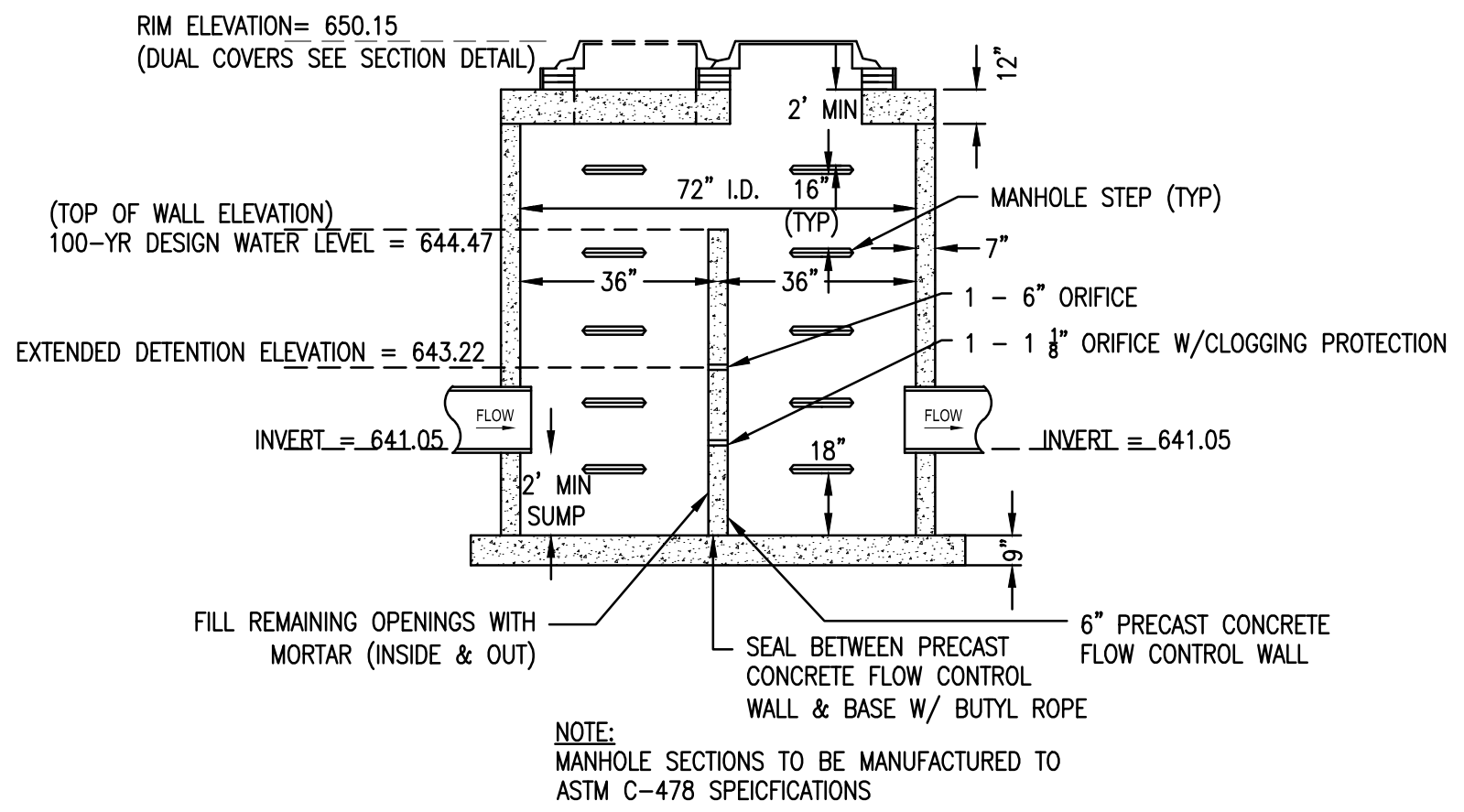
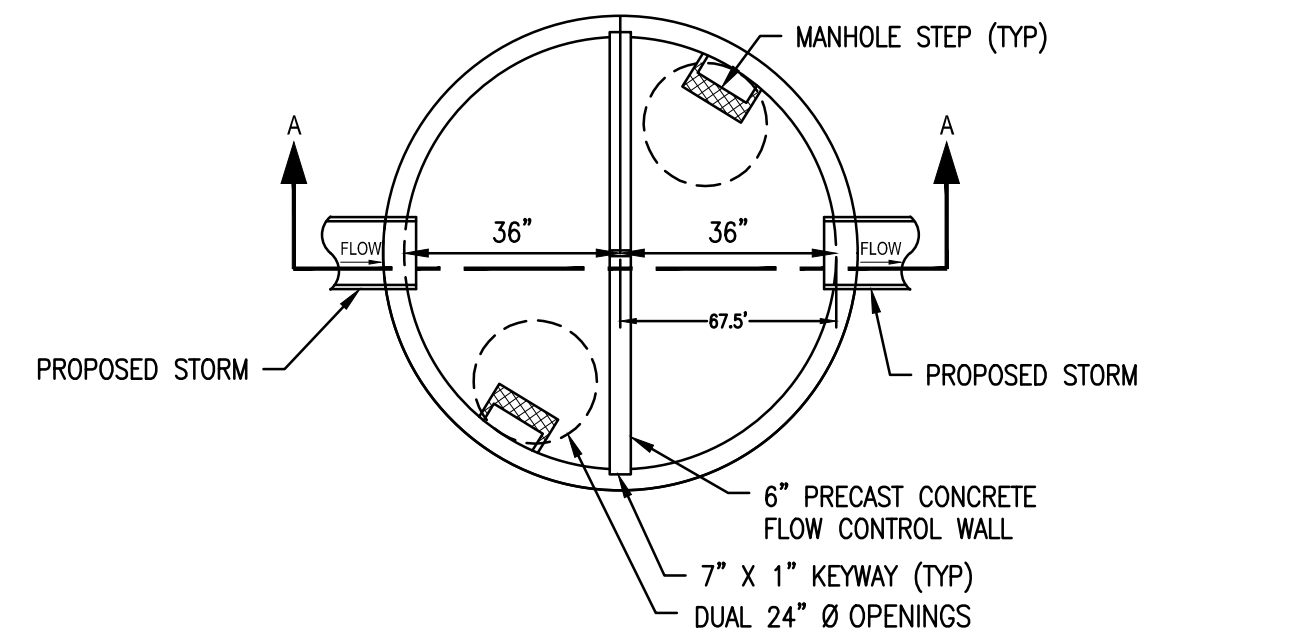
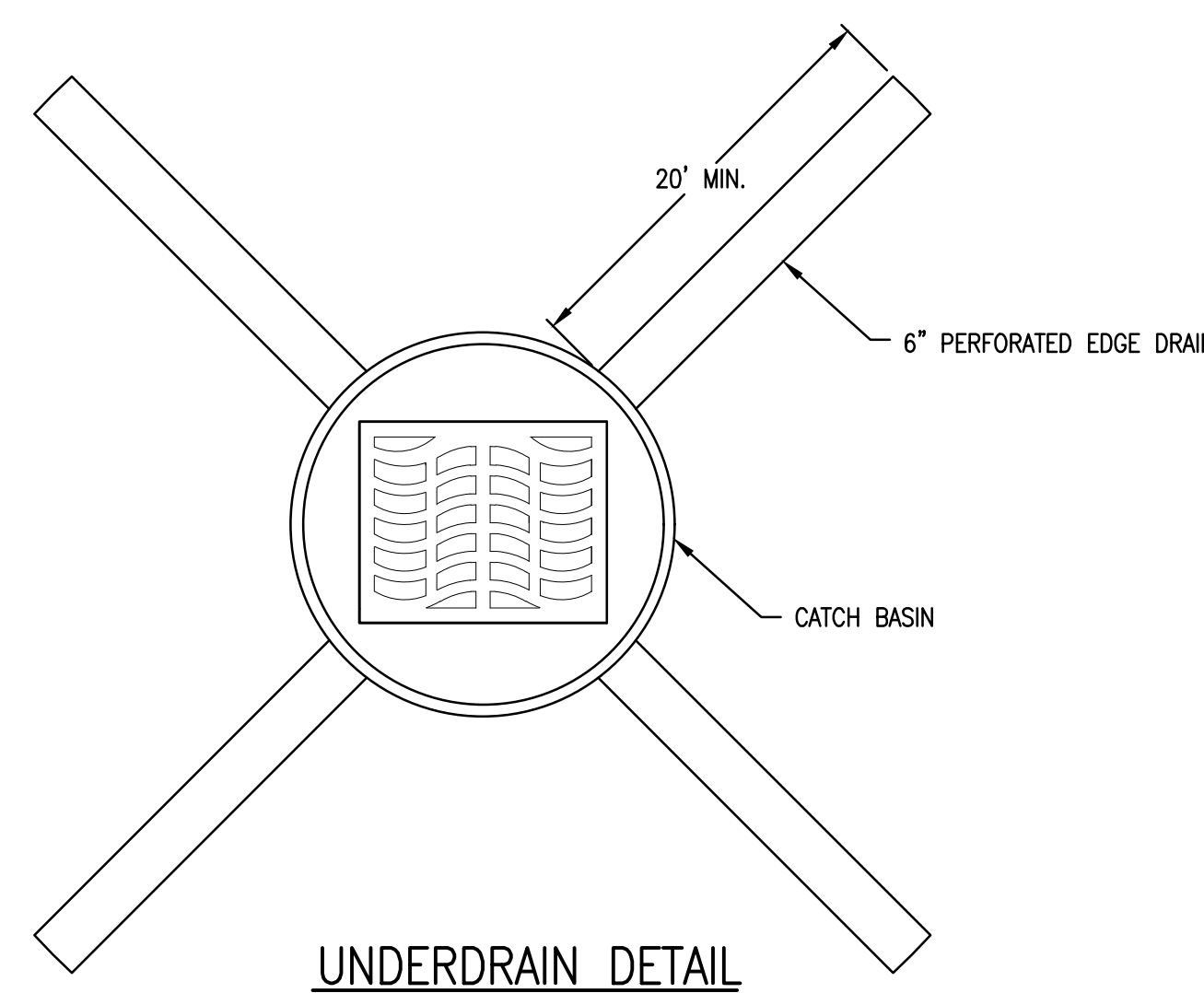
**CITY OF SOUTHFIELD**  
**SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS**  
OAKLAND COUNTY

**STANDARD DETAILS**

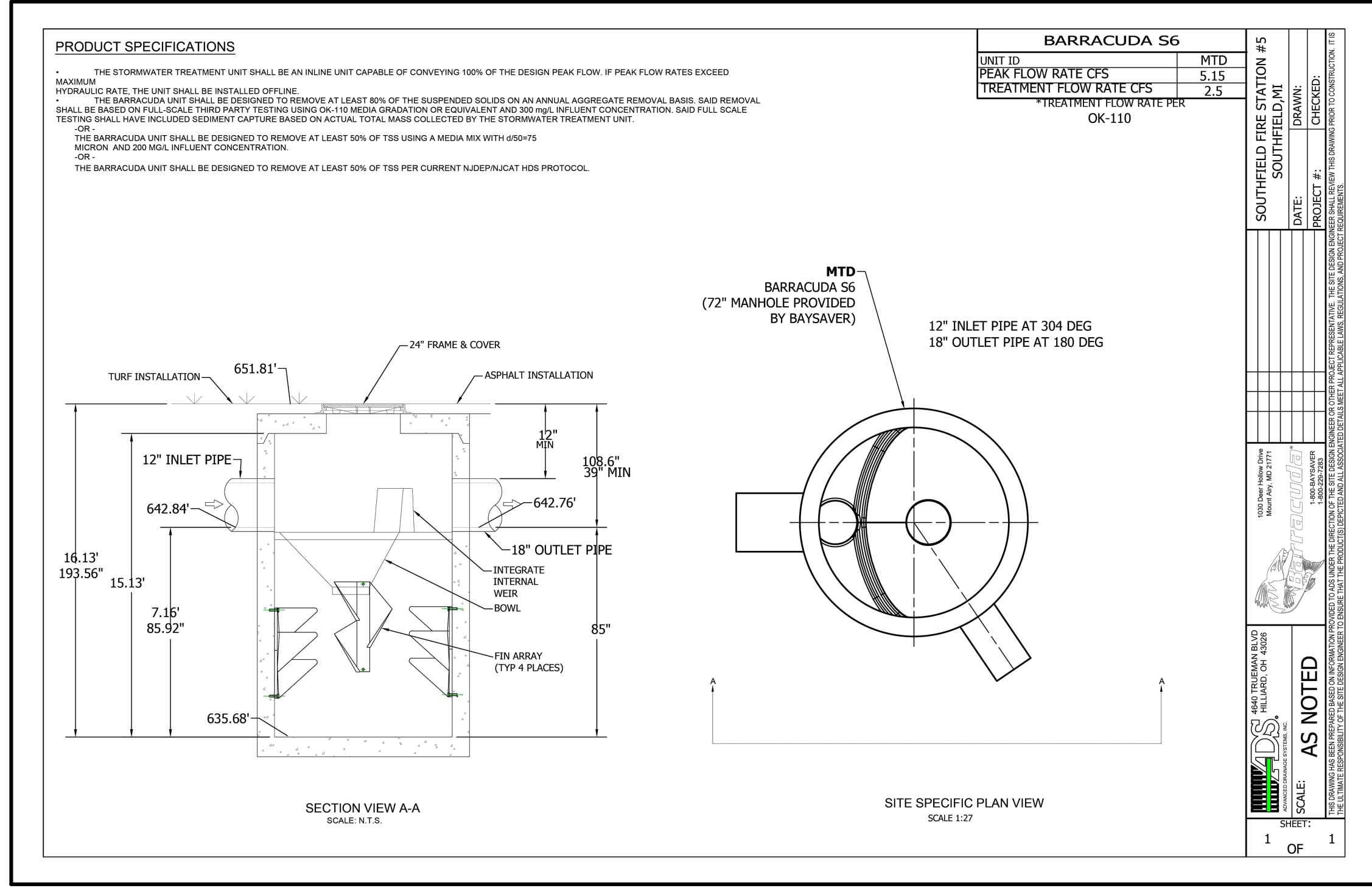




STANDARD UNDERDRAIN



OUTLET CONTROL STRUCTURE



**ADS**

Project Name: Southfield Fire Station #5  
Location: Southfield, MI

Unit Designation: Southfield Fire Station #5

Peak Treatment Rate: 2.5 cfs (Manual Entry)

Barracuda Size: S6

Peak treatment rate: 3.42 cfs

Unit Bypass Flow: 5.15 cfs

Date: 4/1/24

BaySaver Technologies • 1030 Deer Hollow Drive • Mt. Airy, MD 21771

**ADS® Barracuda™ Max**

The Barracuda Max is market-changing stormwater quality technology. This high-performance vortex hydrodynamic separator is designed to remove total suspended solids in order to protect our precious receiving waters. The Barracuda Max also offers an outstanding value that offers multiple pipe configurations, and quick installation. The "Max" version of the Barracuda is built on the base platform of the original ADS Barracuda with improved removal efficiencies and installation components.

**Features**

- Single manhole design
- No elevation loss between the inlet and outlet
- Variable inlet/outlet angle configurations (not just 90°/180° but also 120°/60°, 72°/108°, and 180° orientation)
- Internal bypass for inline installation (where applicable)
- Revolutionary patent-pending "teeth"™ mitigate turbulence in the sump area to prevent resuspension of captured contaminants and an added deflector plate and bowl extension enhance the unit's removal capabilities.

**Benefits**

- Internal components are in stock for quick delivery
- The S3, S4, S6, and S8 can be installed in a standard 36" (900 mm), 48" (1200 mm), 72" (1800 mm), and 96" (2400 mm) precast manhole, respectively
- The S3 & S4 can be provided factory finished with a 36" (900 mm) and 48" (1200 mm) ADS HP manhole and delivered to the jobsite
- The Barracuda Max "teeth"™ and deflector plate assembly are fabricated and designed for quick and easy field assembly
- Designed for easy maintenance using a vacuum truck or similar equipment.
- Inspection and maintenance are performed from the surface with no confined space entry.

**Barracuda Storage Capacities**

Model	Manhole Diameter (in./mm)	Total System Volume (Gallons/Liters)	Treatment Chamber Capacity (Gallons/Liters)	Standard Sediment Capacity (20" depth) (Yards/meters)	NDEP Sediment Capacity (50% of Standard depth) (Yards/meters)
S3	36" (900)	264 (999)	212 (803)	0.44 (0.34)	0.22 (0.17)
S4	48" (1200)	665 (2517)	544 (2052)	0.78 (0.60)	0.39 (0.30)
S6	72" (1800)	1497 (5667)	1269 (4804)	1.75 (1.34)	0.88 (0.67)
S8	96" (2400)	4196 (15884)	3835 (14517)	3.10 (2.37)	1.55 (1.19)

**Maintenance Instructions**

- Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the bowl assembly, visible from the surface. Access this area through the 8" (200 mm), 10" (250 mm), 15" (375 mm) or 20" (500 mm) diameter access cylinder.
- Use a vacuum truck or other similar equipment to remove all water, debris, oils and sediment. See Figure 1.
- Use a high pressure hose to clean the manhole of all the remaining sediment and debris. Then, use the vacuum truck to remove the water.
- Fill the cleaned manhole with water until the level reaches the invert of the outlet pipe.
- Replace the manhole cover.
- Dispose of the polluted water, oils, sediment and trash at an approved facility.
  - Local regulations prohibit the discharge of solid material into the sanitary system. Check with the local sewer authority for authority to discharge the liquid.
  - Some localities treat the pollutants as toxic. Check with local regulators about disposal requirements.
  - Additional local regulations may apply to the maintenance procedure.

**Figure 1**



**Figure 1**

BOWL  
DEFLECTOR PLATE  
SEPARATOR  
SUMP

**Barracuda Specification**

**Materials and Design**

- Concrete Structures: Designed for H-20 traffic loading and applicable soil loads or as otherwise determined by a Licensed Professional Engineer. The materials and structural design of the devices shall be per ASTM C677 and ASTM C688.
- 36" (900 mm) and 48" (1200 mm) HP Manhole Structures: Made from an impact modified polypropylene material meeting the material requirements of ASTM D2564. The eccentric cone reducer shall be manufactured from polyethylene material meeting ASTM D3350 cell class 21520C. Gaskets shall be made of material meeting the requirements of ASTM F47.
- Separator Internals shall be substantially constructed of stainless steel, polyethylene or other thermoplastic material approved by the manufacturer.

**Performance**

- The stormwater treatment unit shall be an inline unit capable of conveying 100% of the design peak flow. If peak flow rates exceed maximum hydraulic rate, the unit shall be installed off-line.
- The Barracuda Max unit shall be designed to remove at least 80% of the suspended solids on an annual aggregate removal basis. Said removal shall be based on full-scale third party testing using 0.1 to media gradation of equipment and 300 mg/L influent concentration. Said full scale testing shall have included sediment capture based on actual total mass collected by the stormwater treatment unit.
- OR
- The Barracuda Max unit shall be designed to remove at least 50% of TSS using a media mix with  $d_{50}$  75 micron and 200 mg/L influent concentration.
- OR
- The Barracuda Max unit shall be designed to remove at least 50% of TSS per current NDEP/NCAT HDS protocol.
- The stormwater treatment unit internals shall consist of (1) separator cone assembly, and (1) sump assembly, which includes the "teeth"™.

**Installation**

Installation of the stormwater treatment unit(s) shall be performed per manufacturer's installation instructions. Such instructions can be obtained by calling Advanced Drainage Systems at 800-821-4710 or by logging on to [www.adsjpe.com](http://www.adsjpe.com).

**ADS**

adsjpe.com  
800-821-4710

**Barracuda® Max & Barracuda Maintenance Guide**

One of Barracuda's advantages is the ease of maintenance. Like any system that collects pollutants, the Barracuda must be maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The systems were designed to minimize the volume of water removed during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash. There is no confined space entry necessary for inspection or maintenance.

The entire maintenance procedure typically takes 2 to 4 hours, depending on the system's size, the captured material, and the vacuum truck's capacity.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

**Inspection and Cleaning Cycle**

Periodic inspection is needed to determine the need for and frequency of maintenance. You should begin inspecting as soon as construction is complete and then on an annual basis. Typically, the system needs to be cleaned every 1-3 years.

Excessive oils, fuels or sediments may reduce the maintenance cycle. Periodic inspection is important.

**Determining When to Clean**

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it contacts the top of the captured sediment and mark that spot on the rod. Then push the probe through to the bottom of the sump and mark that spot to determine sediment depth. Maintenance should occur when the sediment has reached the levels indicated in the Storage Capacity Chart.

**ADS**

adsjpe.com  
1-800-821-4710

**ADS**

adsjpe.com  
1-800-821-4710

REVISION	DESCRIPTION	DATE

PROJECT NUMBER: 0153-25-0180  
DATE: 4/2/24

CITY OF SOUTHFIELD  
SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
OAKLAND COUNTY

STANDARD STORM DETAILS



PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	



# SOUTHFIELD FIRE STATION #5

## SOUTHFIELD, MI, USA

### MC-3500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
  - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
  - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
  - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

### IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
10. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

### NOTES FOR CONSTRUCTION EQUIPMENT

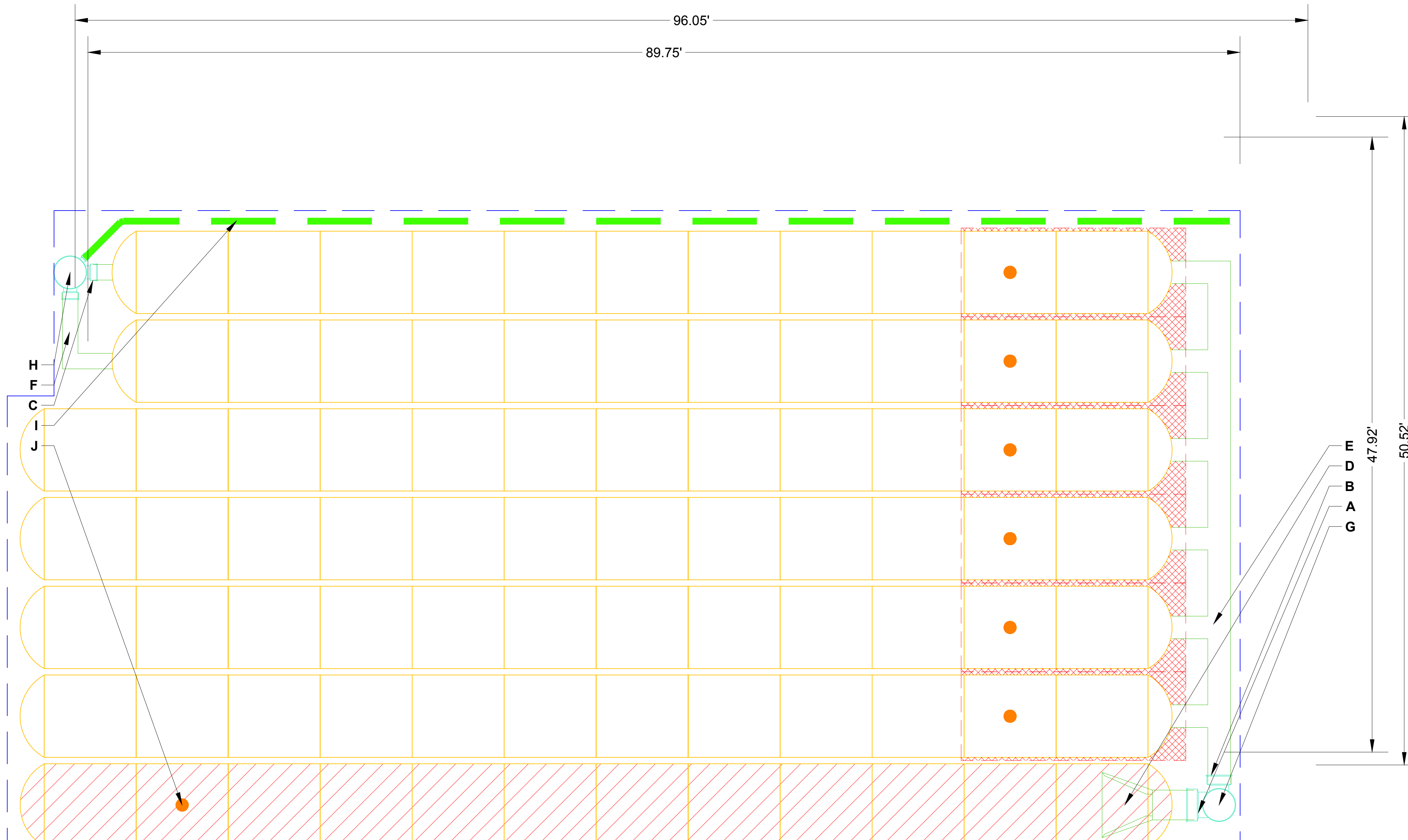
1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
  - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
  - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
  - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

**USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.**

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



PROPOSED LAYOUT		CONCEPTUAL ELEVATIONS:		*INVERT ABOVE BASE OF CHAMBER				
				PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
82	STORMTECH MC-3500 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	12.50					
14	STORMTECH MC-3500 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	6.50					
12	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	6.00	PREFABRICATED END CAP	A	24" BOTTOM CORED END CAP, PART#: MC3500IEPP24BC / TYP OF ALL 24" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	2.06"	
9	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	6.00	PREFABRICATED END CAP	B	18" TOP CORED END CAP, PART#: MC3500IEPP18TC / TYP OF ALL 18" TOP CONNECTIONS	20.03"	
0	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	6.00	PREFABRICATED END CAP	C	12" BOTTOM CORED END CAP, PART#: MC3500IEPP12B / TYP OF ALL 12" BOTTOM CONNECTIONS	1.35"	
9225	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	5.50	FLAMP	D	INSTALL FLAMP ON 24" ACCESS PIPE / PART#: MCFLAMP		
		TOP OF MC-3500 CHAMBER:	4.50	MANIFOLD	E	18" x 18" TOP MANIFOLD, ADS N-12	20.03"	
		18" x 18" TOP MANIFOLD INVERT:	2.42	MANIFOLD	F	12" x 12" BOTTOM MANIFOLD, ADS N-12	1.35"	
		24" ISOLATOR ROW PLUS INVERT:	0.92	NYLOPLAST (INLET W/ ISO PLUS ROW)	G	30" DIAMETER (24.00" SUMP MIN)		16.2 CFS IN
4799	SYSTEM AREA (SF)	12" x 12" BOTTOM MANIFOLD INVERT:	0.86	NYLOPLAST (OUTLET)	H	30" DIAMETER (DESIGN BY ENGINEER)		4.0 CFS OUT
293.1	SYSTEM PERIMETER (ft)	12" BOTTOM CONNECTION INVERT:	0.86	UNDERDRAIN	I	6" ADS N-12 DUAL WALL PERFORATED HDPE UNDERDRAIN		
		BOTTOM OF MC-3500 CHAMBER:	0.75	INSPECTION PORT	J	4" SEE DETAIL (TYP 7 PLACES)		
		UNDERDRAIN INVERT:	0.00					
		BOTTOM OF STONE:	0.00					



**NOTES**

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

**SOUTHFIELD FIRE STATION #5**

SOUTHFIELD, MI, USA

DATE: \_\_\_\_\_ DRAWN: DG

PROJECT #: \_\_\_\_\_ CHECKED: N/A

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**2 OF 6**

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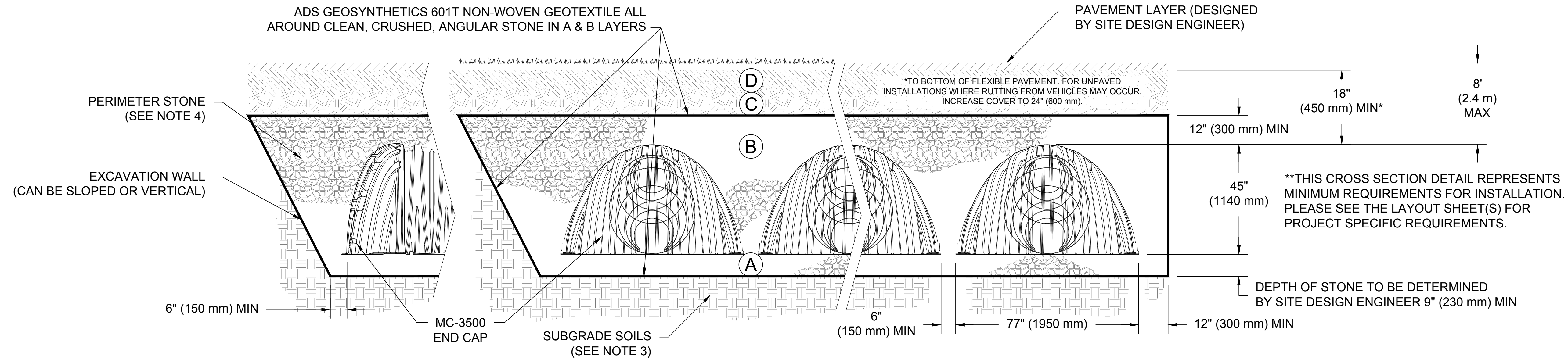


## ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	<b>FINAL FILL:</b> FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	<b>INITIAL FILL:</b> FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE.  MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 <sup>1</sup> A-1, A-2-4, A-3  OR  AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	<b>EMBEDMENT STONE:</b> FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE <sup>5</sup>	AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	<b>FOUNDATION STONE:</b> FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE <sup>5</sup>	AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. <sup>2,3</sup>

**PLEASE NOTE:**

- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
- STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
- WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
- WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



**NOTES:**

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
- MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

SOUTHFIELD FIRE STATION #5

SOUTHFIELD, MI, USA

DATE: \_\_\_\_\_ DRAWN: DG CHECKED: N/A

PROJECT #: \_\_\_\_\_ DESCRIPTION

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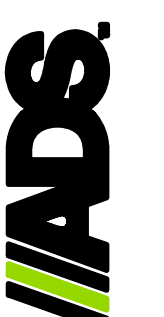
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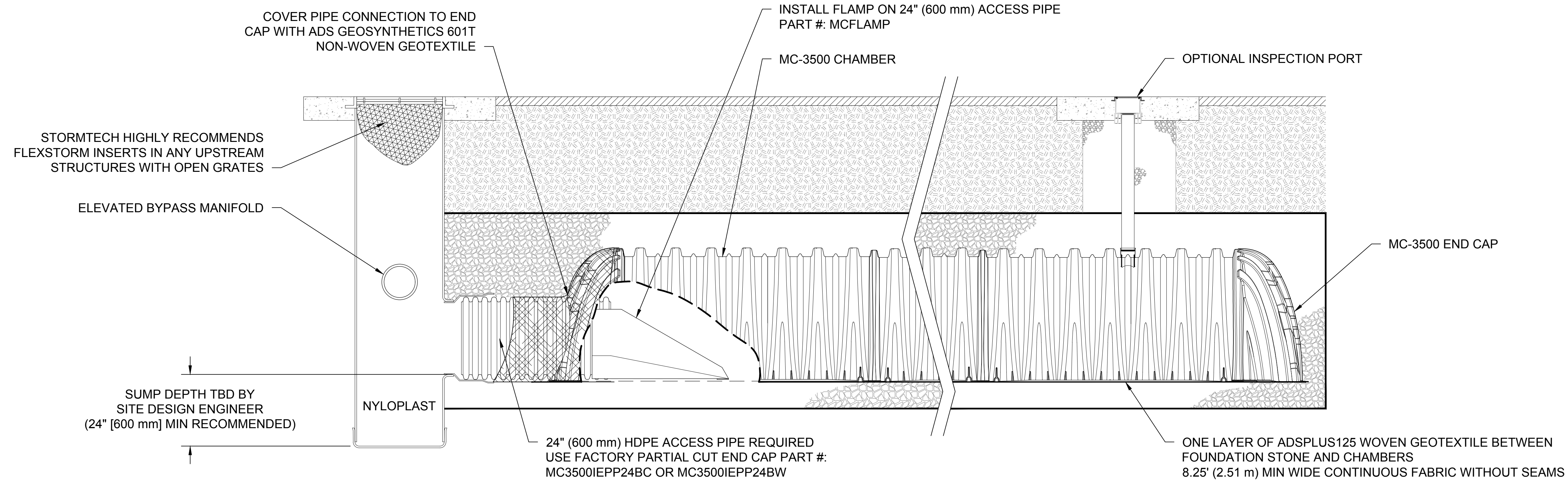
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**MC-3500 ISOLATOR ROW PLUS DETAIL**

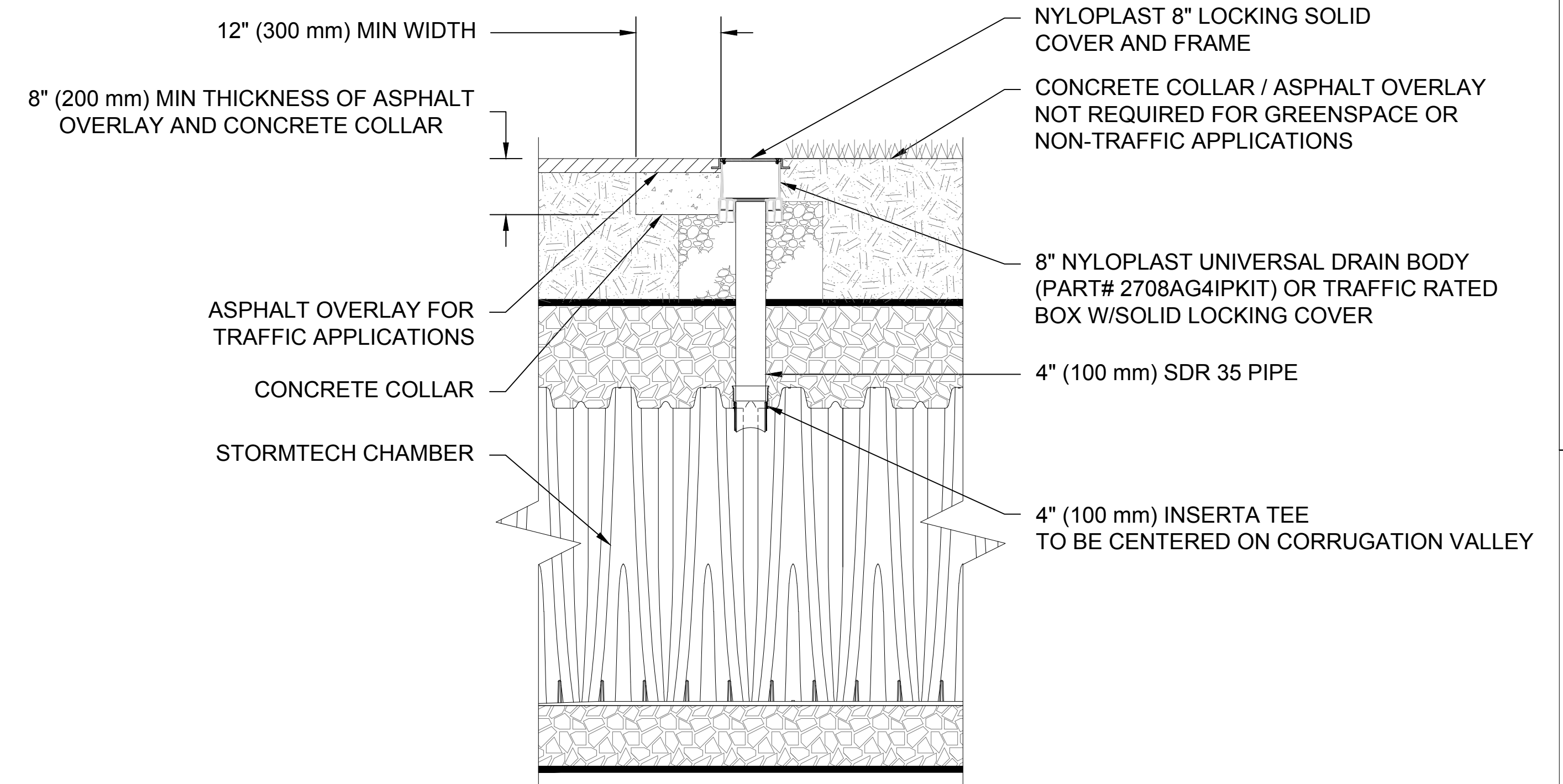
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**INSPECTION & MAINTENANCE**

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
    - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
    - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
    - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
    - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
    - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
  - B. ALL ISOLATOR PLUS ROWS
    - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
    - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
      - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
      - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
    - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
  - B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
  - C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

**NOTES**

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



NOTE:  
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

**4" PVC INSPECTION PORT DETAIL  
(MC SERIES CHAMBER)**

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**SOUTHFIELD FIRE STATION #5**

SOUTHFIELD, MI, USA  
DATE: \_\_\_\_\_ DRAWN: DG  
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NO.	DESCRIPTION	DATE	DRW	CHK

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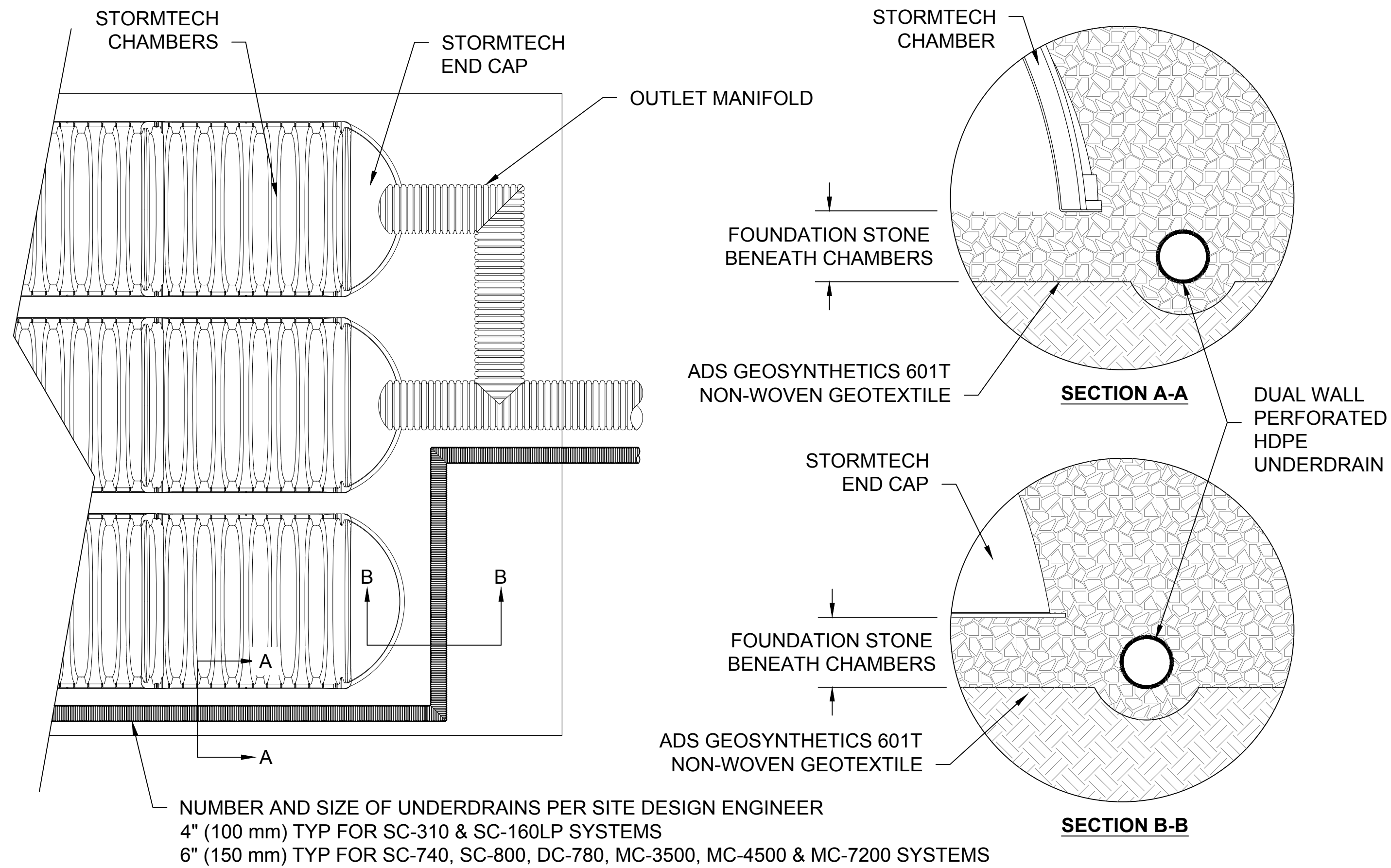


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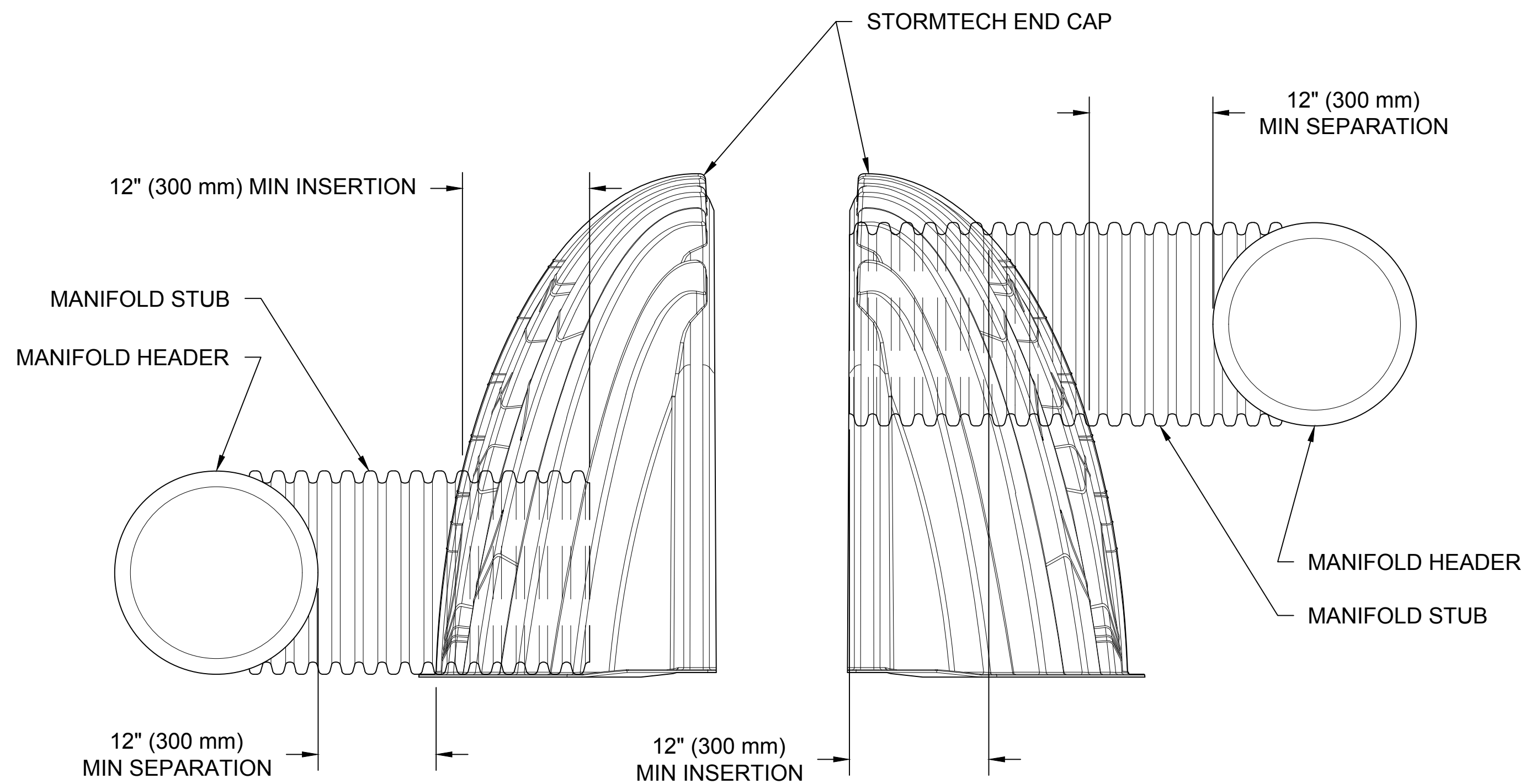
### UNDERDRAIN DETAIL

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### MC-SERIES END CAP INSERTION DETAIL

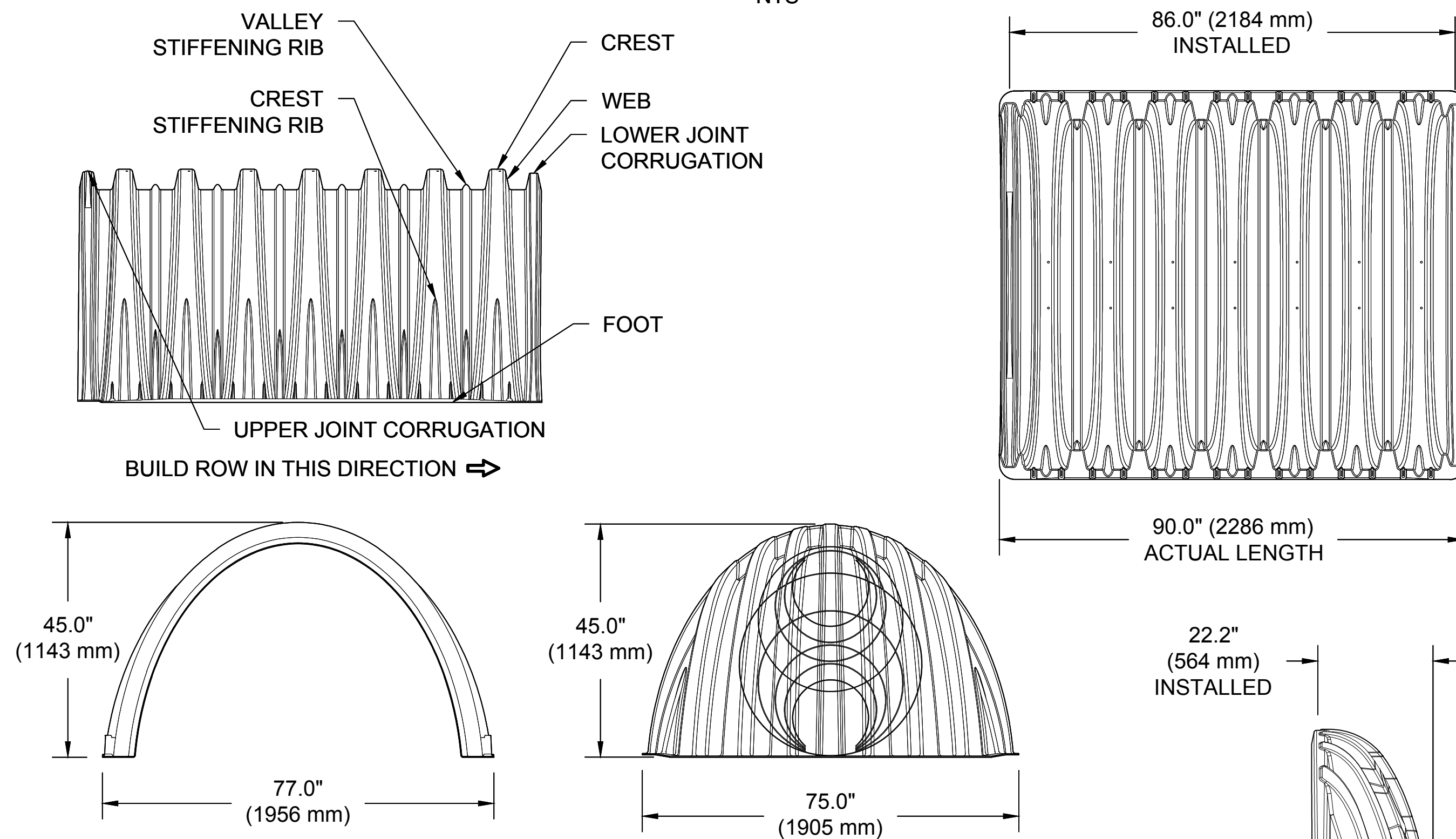
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NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

### MC-3500 TECHNICAL SPECIFICATION

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#### NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)		
77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)	
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m³)
MINIMUM INSTALLED STORAGE*	175.0 CUBIC FEET	(4.96 m³)
WEIGHT	134 lbs.	(60.8 kg)

#### NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)		
75.0" X 45.0" X 22.2"	(1905 mm X 1143 mm X 564 mm)	
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	45.1 CUBIC FEET	(1.28 m³)
WEIGHT	49 lbs.	(22.2 kg)

\*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION, 6" SPACING BETWEEN CHAMBERS, 6" (152 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"  
 STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"  
 END CAPS WITH A WELDED CROWN PLATE END WITH "C"  
 END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC3500IEPP06T		33.21" (844 mm)	---
MC3500IEPP06B	6" (150 mm)	---	0.66" (17 mm)
MC3500IEPP08T		31.16" (791 mm)	---
MC3500IEPP08B	8" (200 mm)	---	0.81" (21 mm)
MC3500IEPP10T		29.04" (738 mm)	---
MC3500IEPP10B	10" (250 mm)	---	0.93" (24 mm)
MC3500IEPP12T		26.36" (670 mm)	---
MC3500IEPP12B	12" (300 mm)	---	1.35" (34 mm)
MC3500IEPP15T		23.39" (594 mm)	---
MC3500IEPP15B	15" (375 mm)	---	1.50" (38 mm)
MC3500IEPP18TC		20.03" (509 mm)	---
MC3500IEPP18TW			
MC3500IEPP18BC	18" (450 mm)	---	1.77" (45 mm)
MC3500IEPP18BW			
MC3500IEPP24TC		14.48" (368 mm)	---
MC3500IEPP24TW			
MC3500IEPP24BC	24" (600 mm)	---	2.06" (52 mm)
MC3500IEPP24BW			
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

SOUTHFIELD FIRE STATION #5

SOUTHFIELD, MI, USA  
 DATE: \_\_\_\_\_  
 PROJECT #: \_\_\_\_\_  
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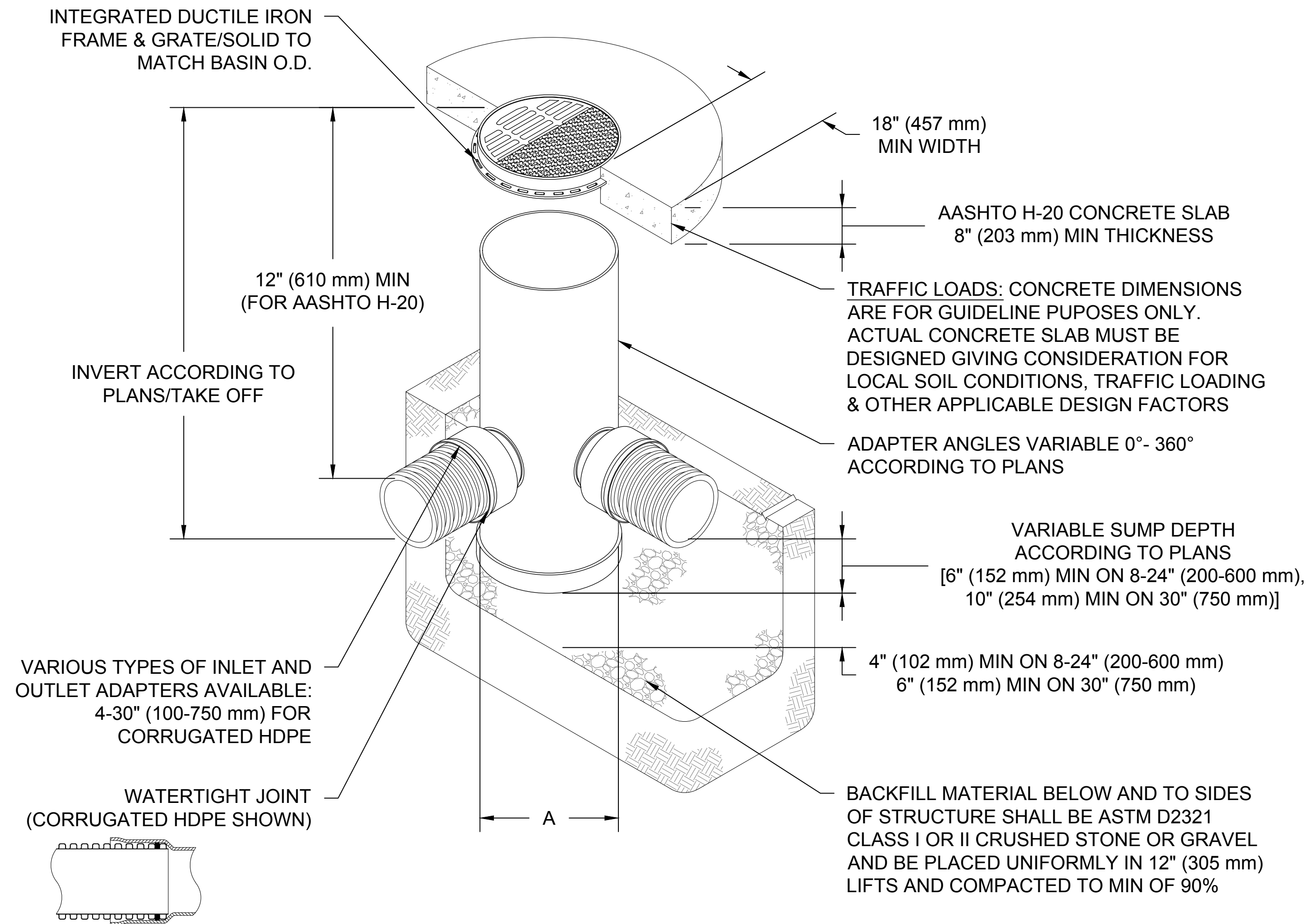
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# NYLOPLAST DRAIN BASIN

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## NOTES

- 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
- 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
- DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
- DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
- FOR COMPLETE DESIGN AND PRODUCT INFORMATION: [WWW.NYLOPLAST-US.COM](http://WWW.NYLOPLAST-US.COM)
- TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

SOUTHFIELD FIRE STATION #5

SOUTHFIELD, MI, USA

DATE:

DRAWN: DG

PROJECT #:

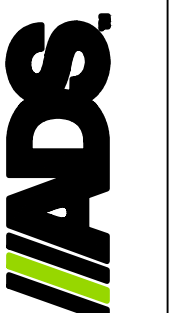
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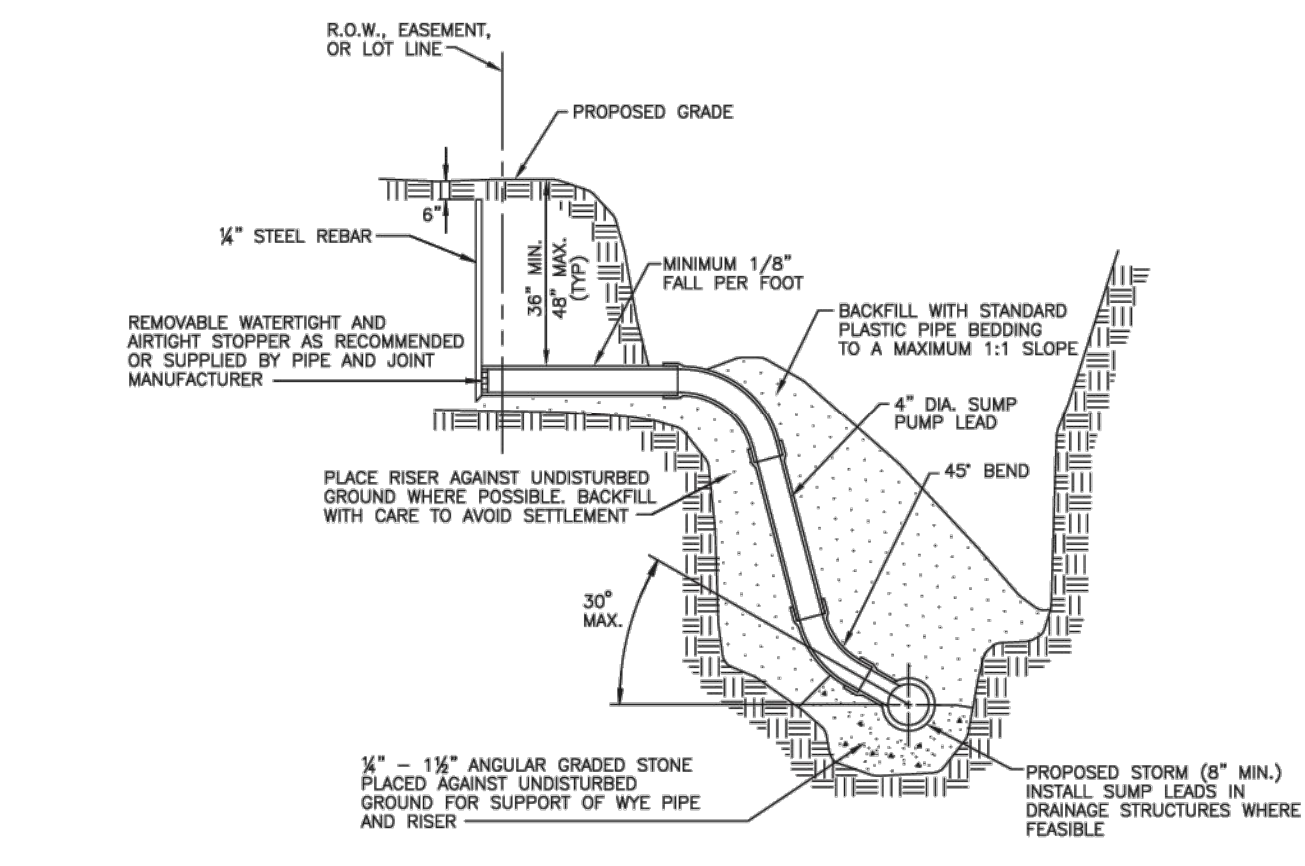


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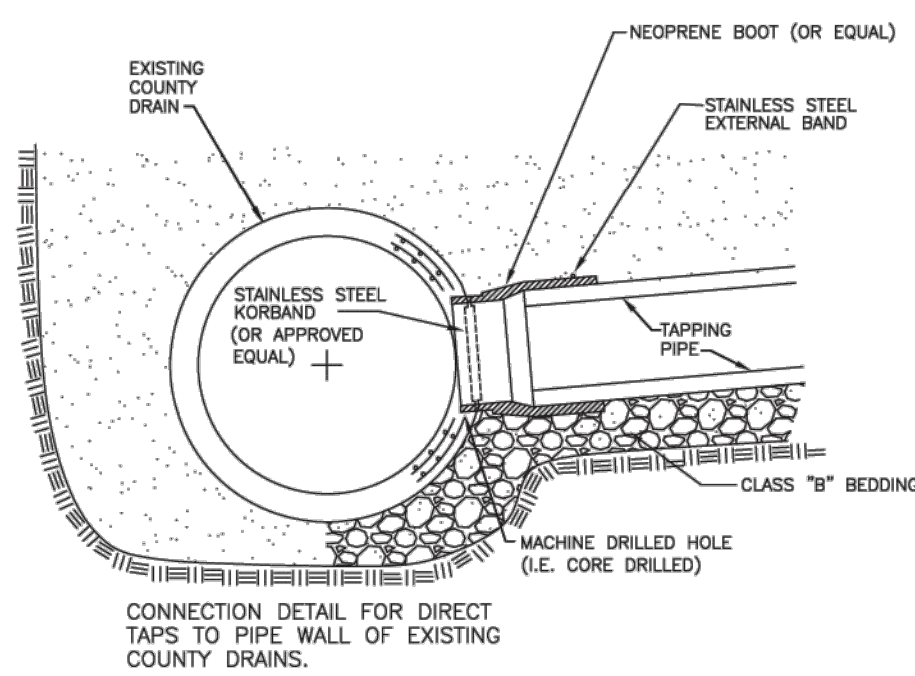
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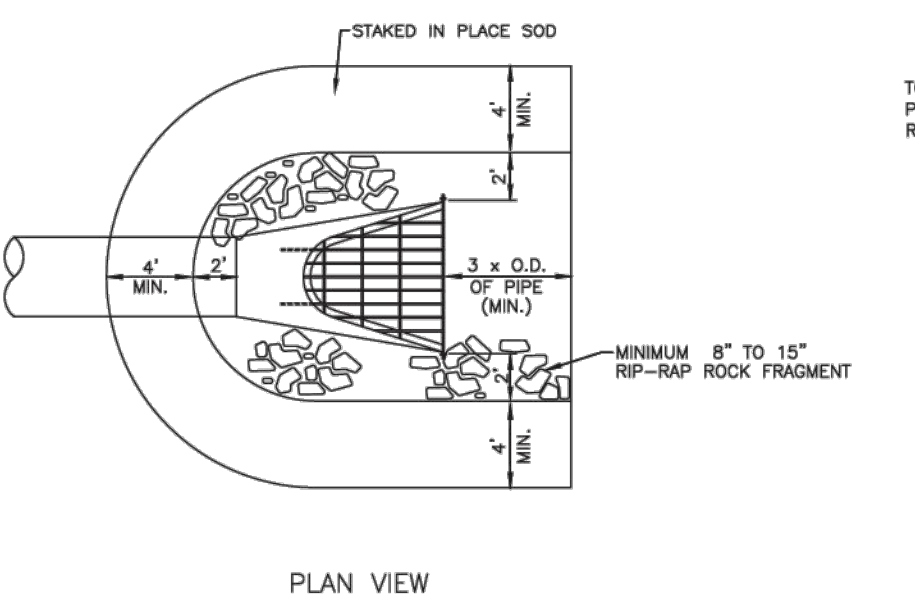




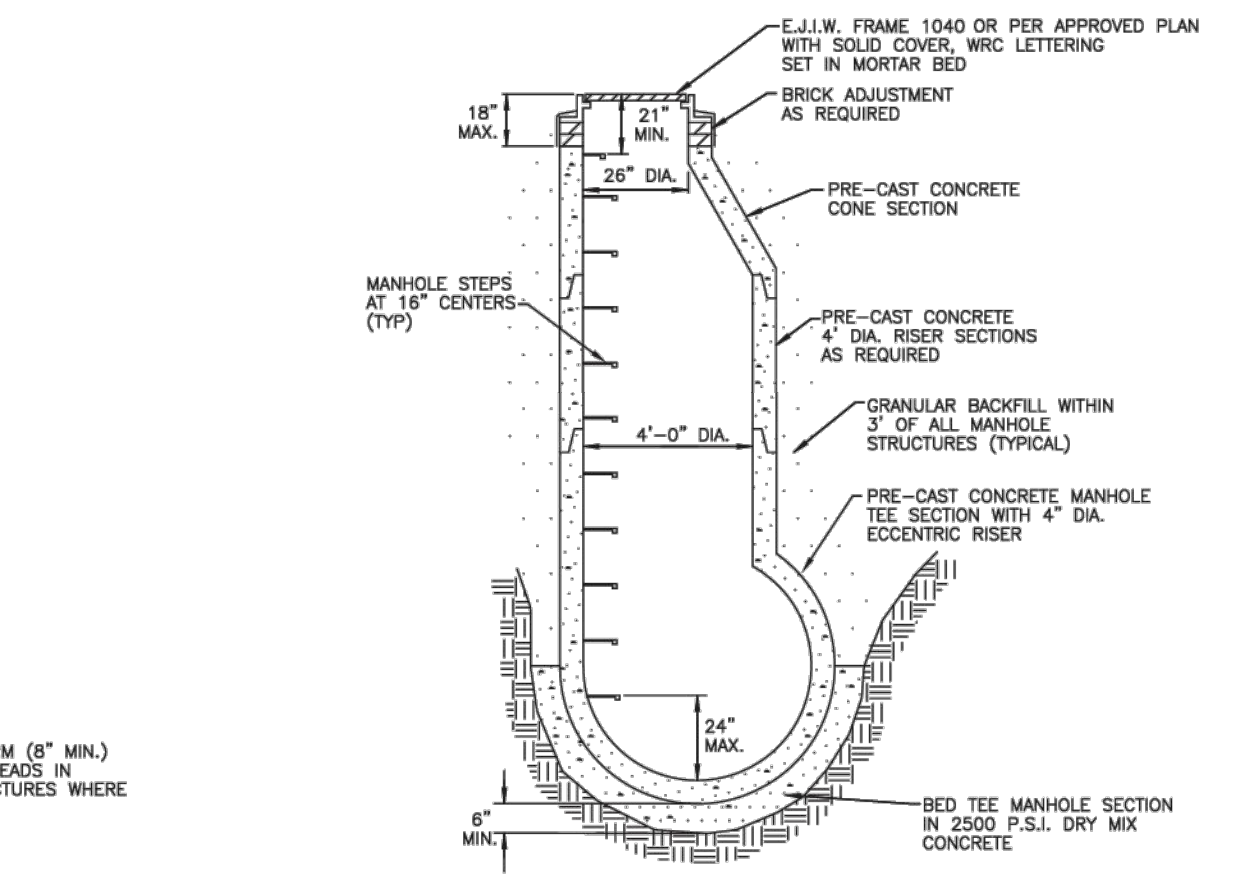
**HOUSE LEAD DETAIL FOR 4" DIA. PLASTIC SUMP PUMP LEADS**  
NO SCALE



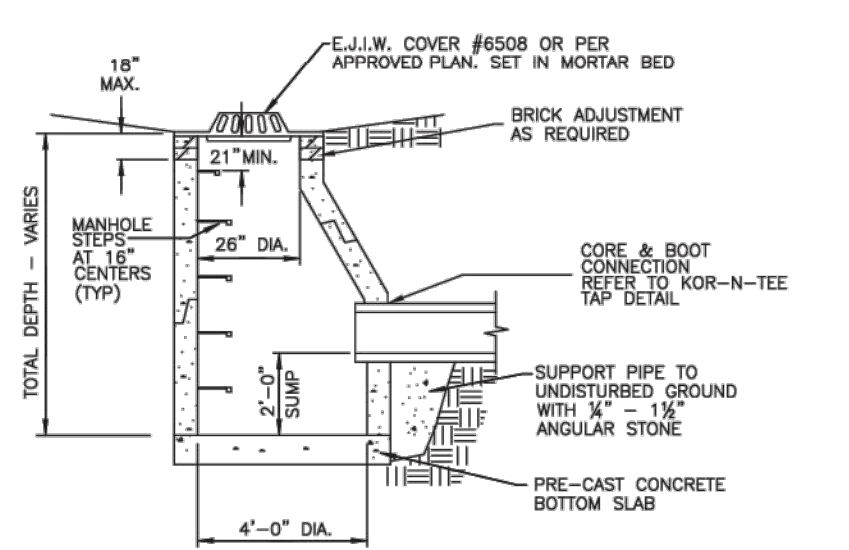
**KOR-N-TEE TAP (OR APPROVED EQUAL)**  
NO SCALE



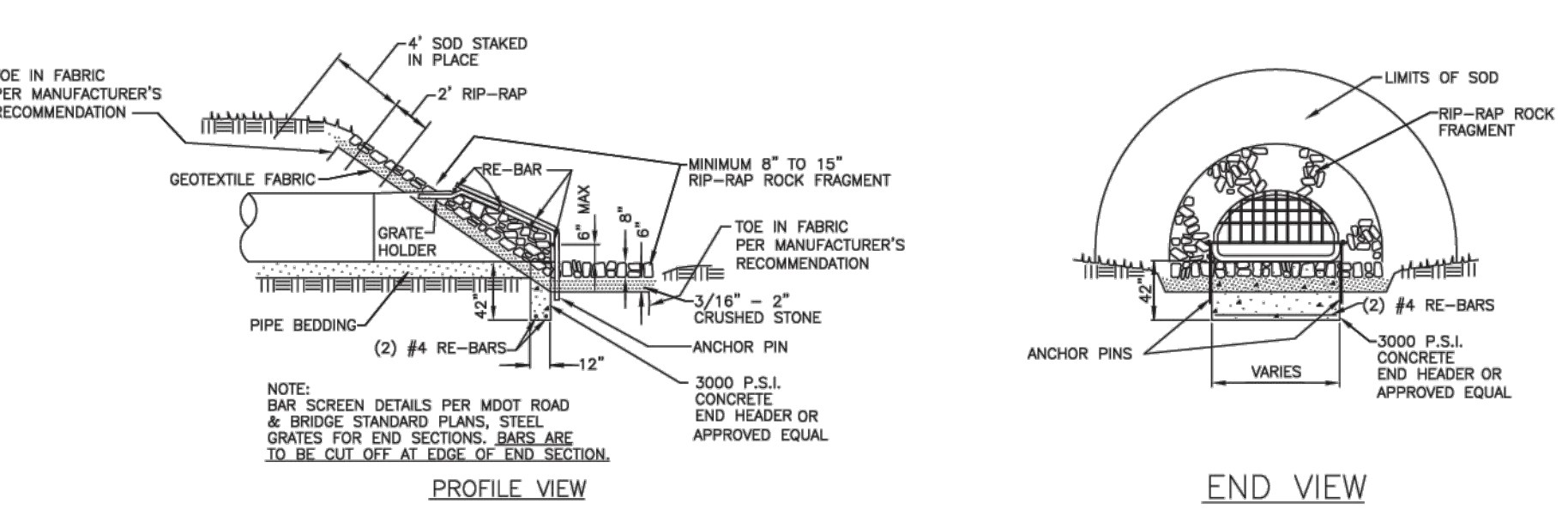
**ABS (TRUSS AND SOLID WALL), PVC (TRUSS, SOLID WALL, A2000), ADS N-12 WT PIPE BEDDING DETAIL**  
NO SCALE



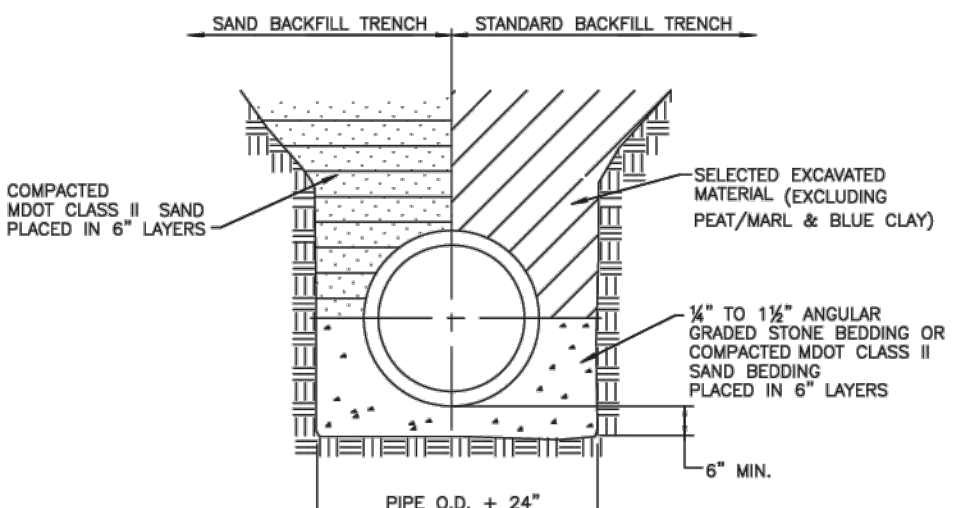
**PRE-CAST TEE MANHOLE DETAIL**  
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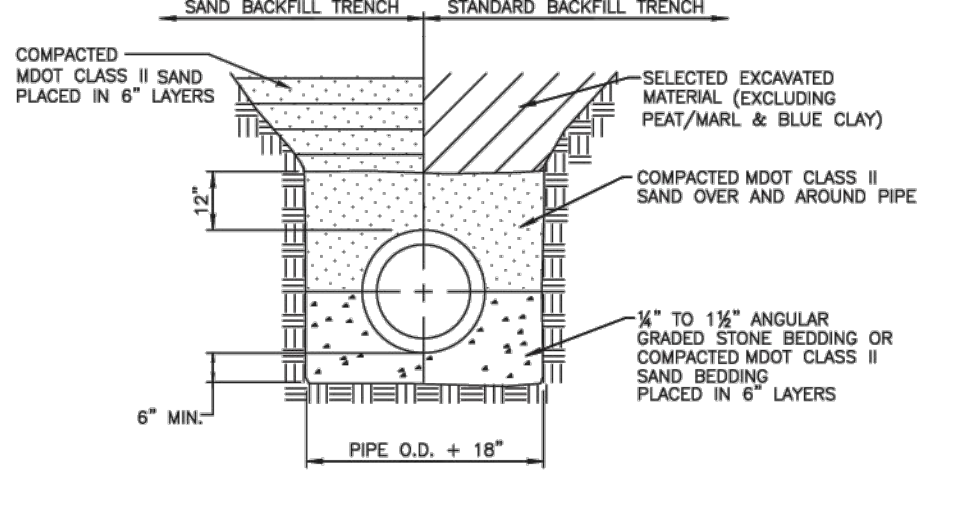
**PRE-CAST CATCH BASIN DETAIL**  
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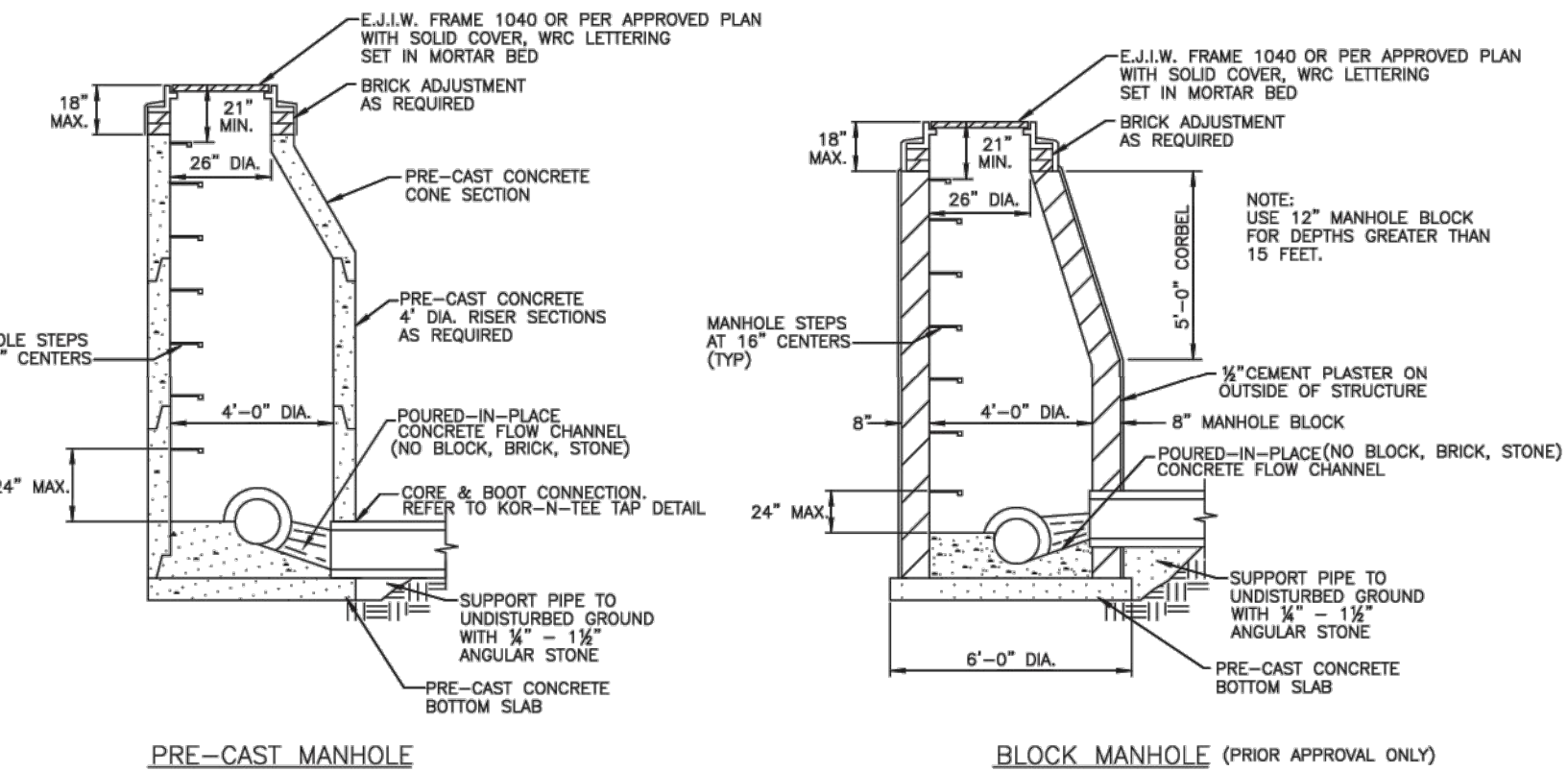
**END SECTION AND BAR SCREEN DETAIL**  
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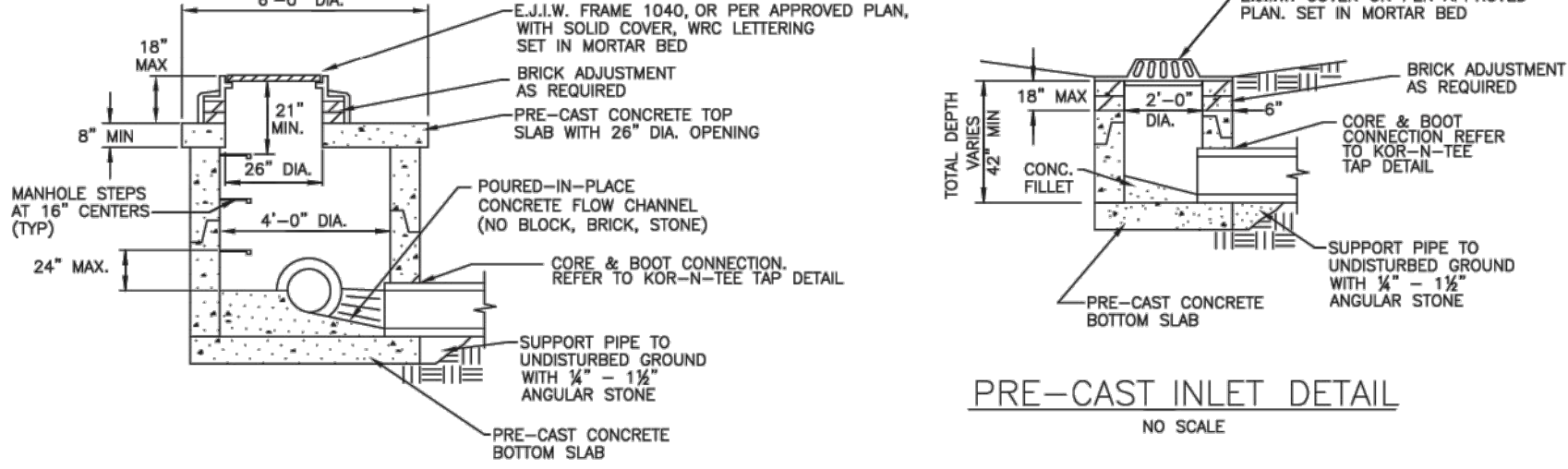
**CLASS "B" BEDDING TRENCH DETAIL FOR 27" DIAMETER AND LARGER CONCRETE PIPE**  
NO SCALE



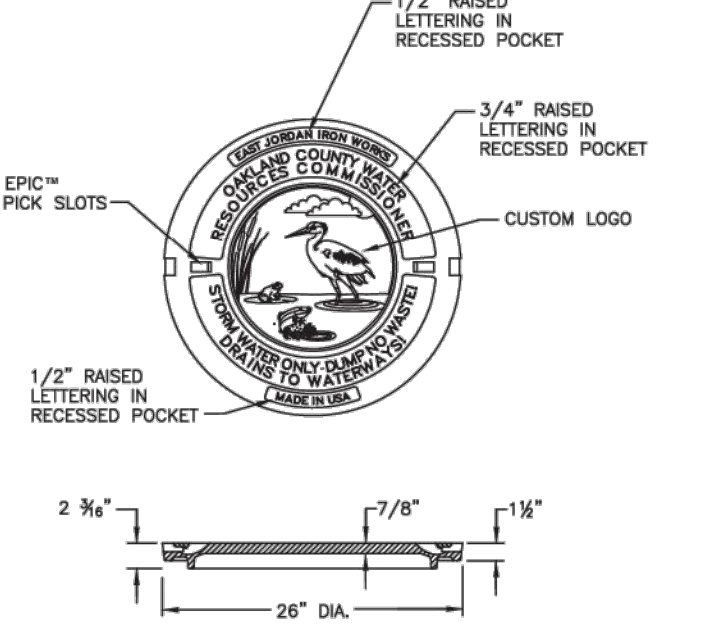
**CLASS "B" BEDDING TRENCH DETAIL FOR 24" DIAMETER AND SMALLER CONCRETE PIPE**  
NO SCALE



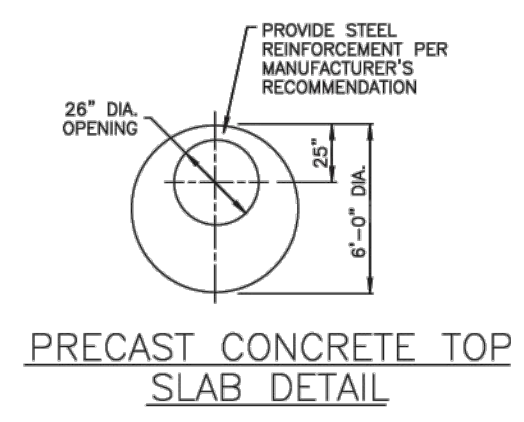
**STANDARD MANHOLE DETAILS**  
NO SCALE



**PRE-CAST LOW HEAD MANHOLE DETAIL**  
NO SCALE (PRIOR APPROVAL ONLY)



**LETTERED MANHOLE COVER FOR WRC**  
NO SCALE



**PRECAST CONCRETE TOP SLAB DETAIL**

**GENERAL NOTES**

- Type and class of pipe shall be as specified on plans.
- Class "B" bedding shall be used throughout, unless otherwise specified on the plan.
- All end sections 18" and larger shall be provided with a bar screen unless otherwise approved.
- Standard rip-rap shall be 8"-15" fragmented rock, heavy rip-rap shall be 16"-24" fragmented rock. (No Broken Concrete)
- MANHOLE REQUIREMENTS:
  - All new catch basins, inlets, and manholes are to be manufactured to ASTM C-478 specifications.
  - All new catch basins, inlets, and manholes shall have WRC approved flexible, watertight seals where pipes pass through walls. Manholes shall be of precast sections with modified groove tongue and rubber gasket type joints. Pre cast manhole cone sections shall be WRC approved modified eccentric cone type.
  - Taps through manhole joints or cone sections are prohibited unless otherwise approved.
  - Manhole steps to be plastic coated steel meeting the requirements in ASTM D 2146, Type II, Grade 4910B, MA, Industries P.S.I. Polypropylene, (or approved equal). Steps to be installed during manhole manufacture. Place at 18" centers 45° from centerline of sewer.
  - Cone section with modified groove tongue joints and with stud inserts cast in place. Top to have flush surface.
  - ASTM C-478 riser section with modified groove tongue joints.
  - Res-seal, link-seal, press wedge II, or kor-n-seal boot (with stainless steel korband) flexible rubber manhole joints. (or approved equal).
  - The inside joints of manholes, catch basins, and pipe sizes over 42" and larger in diameter shall be pointed up with mortar upon completion of backfilling.
- CONCRETE PIPE REQUIREMENTS:
  - Concrete pipe to be per ASTM C76 standards.
  - It will be required to TV all pipe 30 days after installation.
  - The contractor shall provide reinforced concrete pipe as specified on the plans.
  - All reinforced concrete pipe shall have modified groove tongue joints with o-ring type rubber gasket, per A.S.T.M. specifications C443.
  - The inside joints of manholes, catch basins, and pipe sizes over 42" and larger in diameter shall be pointed up with mortar upon completion of backfilling.
- SUMP PUMP LEAD REQUIREMENTS:
  - All sump pump leads connected to a County Drain pipe shall be pre-manufactured.
  - Sump pump leads connected to a manhole shall be cored and booted. Refer to Kor-N-Tee Top Detail.
  - Sump pump mains and leads shall be ABS (truss and solid wall), PVC (truss, solid wall, A2000), ADS N-12 WT with premium joints.
  - Ends of all 4" sump pump leads shall be temporarily capped and their location staked, witnessed and recorded.
  - All sump pump leads to be taken to the property line, easement line or as indicated on the plan.
  - Sump pump mains must have a cleanout with a minimum inside diameter of 24" and be constructed at changes of alignment, ends of sump pump mains or as indicated on the plan.
- RESTORATION REQUIREMENTS:
  - All disturbed area within the County Drain right-of-way shall be restored as follows:
    - Under roads, sidewalks, driveways and parking areas, backfill material shall be placed loosely into trenches in six (6) inch layers with each layer compacted to not less than 95% of maximum dry density as determined by the ASTM D 1557 Compaction Standard (modified proctor compaction test). All other areas shall have each layer compacted to not less than 90% of maximum dry density.
    - Finish subgrade
    - Place 3" thickness clean topsoil acceptable to the engineer to attain finished grade. Topsoil must not be contaminated and may not be a mixture of natural underlying soils, subbase materials, or other materials. It must consist of natural loam, sandy loam, silty loam or clay loam humus-bearing soil adapted to the sustenance of plant life. Topsoil must be neither excessively acidic nor excessively alkaline. It must be of mineral origin, exclusive of any peat or muck.
    - Apply seed and fertilizer as follows:
 

Location	Seeding Requirements	Fertilizer Requirement
Slopes and Ditch, Banks, Etc.	M.D.O.T. "Roadside Mix" Turf Seed Mixture TCM (10% Kentucky Blue, 20% Perennial Rye, 30% Hard Fescue, 40% Creeping Red Fescue) applied at 220 lb/acre	M.D.O.T. Seeding and Sodding Fertilizers, Class A
Other Areas	M.D.O.T. "Roadside Mix" Turf Seed Mixture THM (30% Kentucky Blue, 20% Perennial Rye, 50% Creeping Red Fescue) applied at 220 lb/acre	M.D.O.T. Seeding and Sodding Fertilizers, Class A
    - \* Sod is required in maintained lawn areas. Refer to WRC General Specifications for additional requirements and information.
    - apply straw or marsh hay mulch in an air-dry condition to all seeded areas over the surface to a uniform thickness of 2 tons/acre.
    - mulch shall be anchored in place with biodegradable netting, not larger than 1/2" by 2" nor smaller than 1/2" by 1/2".
    - The contractor shall be responsible to insure the growth of all seeded areas, and shall re-seed as necessary to accomplish this.

**STORM DRAIN NOTES AND DETAILS**

REVISION BLOCK		Date Source / Source Date:	Nil
Rev.	By	Date	Description
1	U	3/7/18	PROPOSED DETAIL CHANGES / NEW LOGO
2	U	9/25/18	APPROVAL FOR EXHIBITION COMMITTEE
3	U	6/28/19	REVISED MH COVER DETAIL
4	U	10/27/19	REVISED GENERAL NOTES

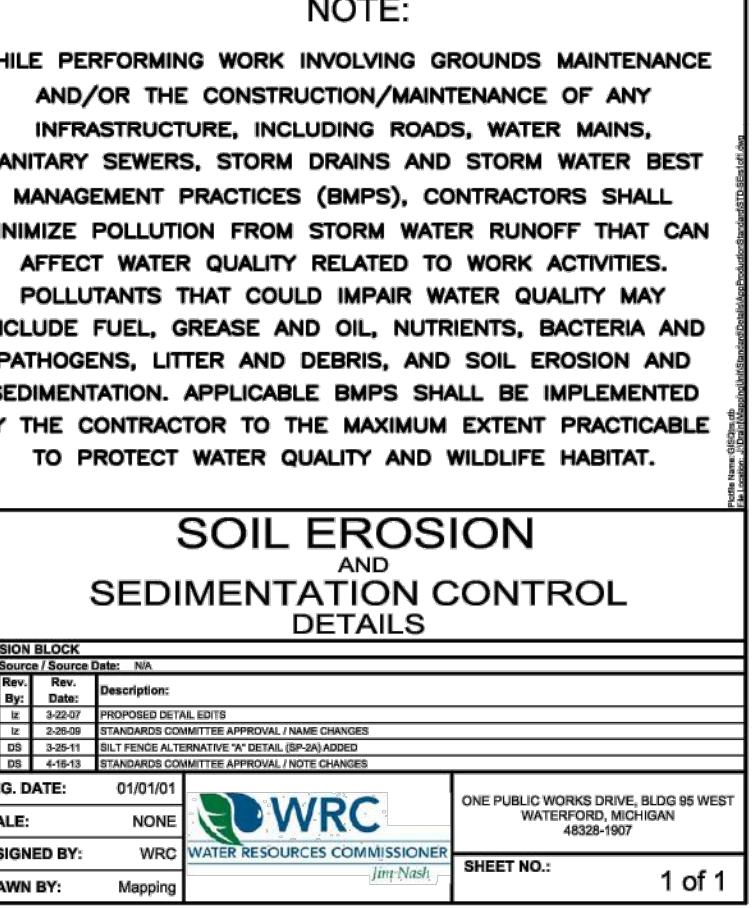
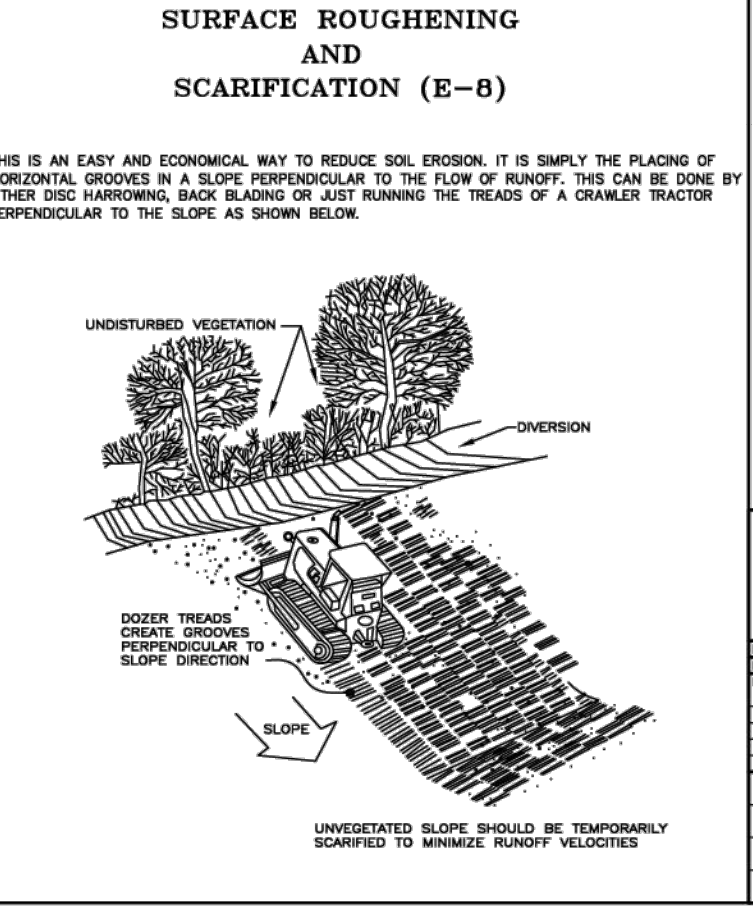
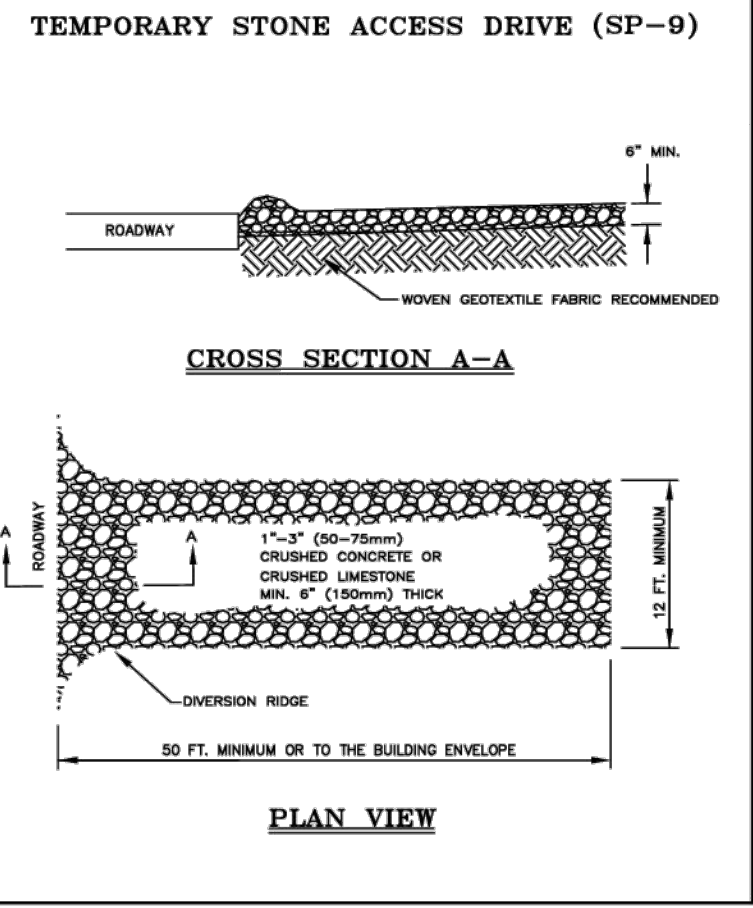
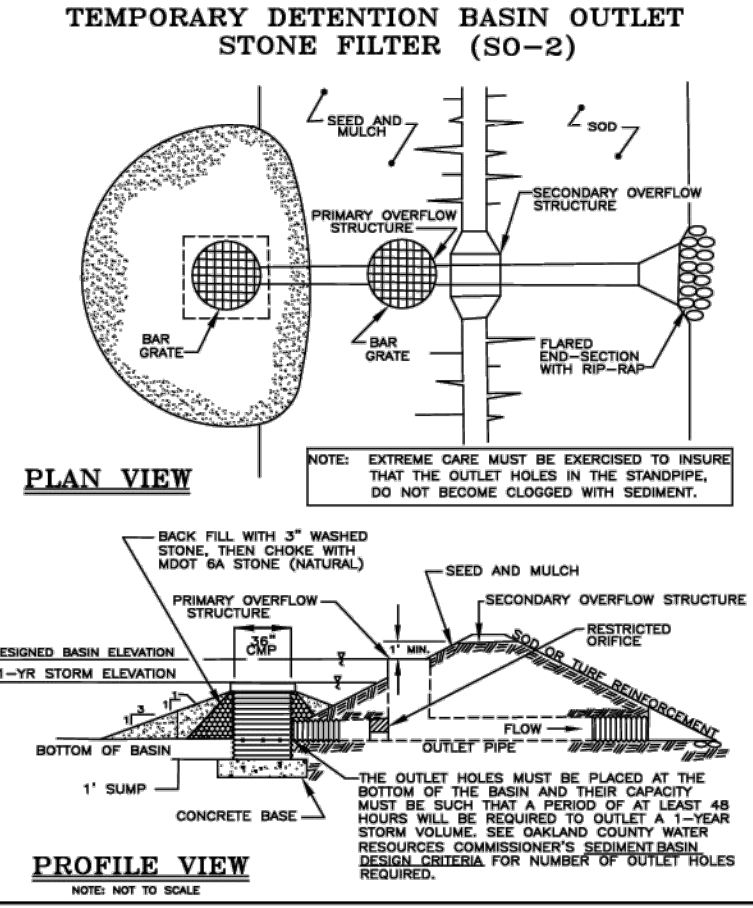
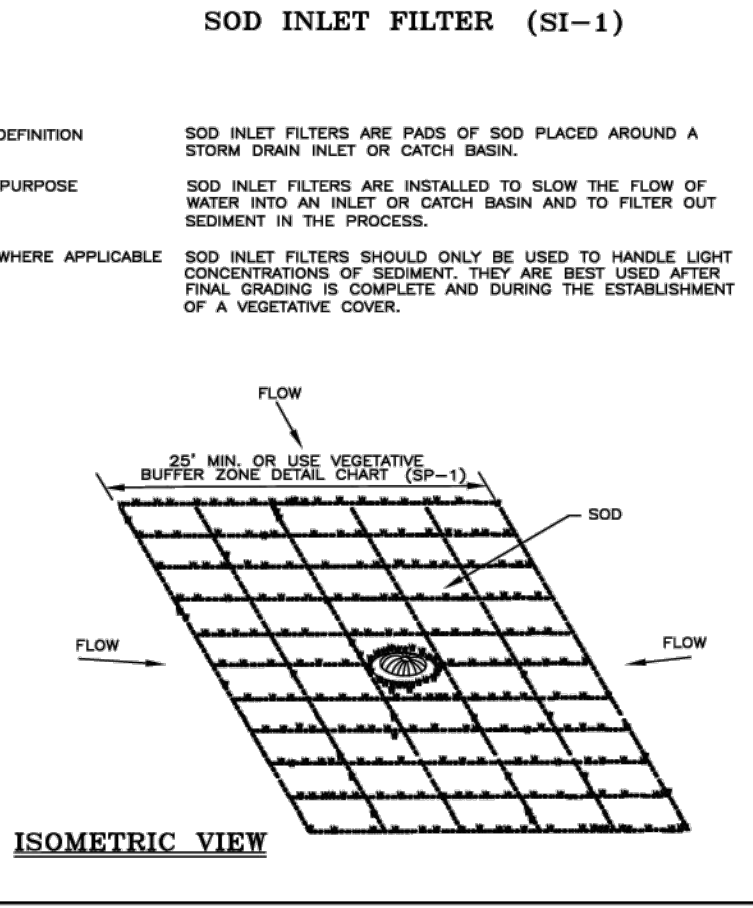
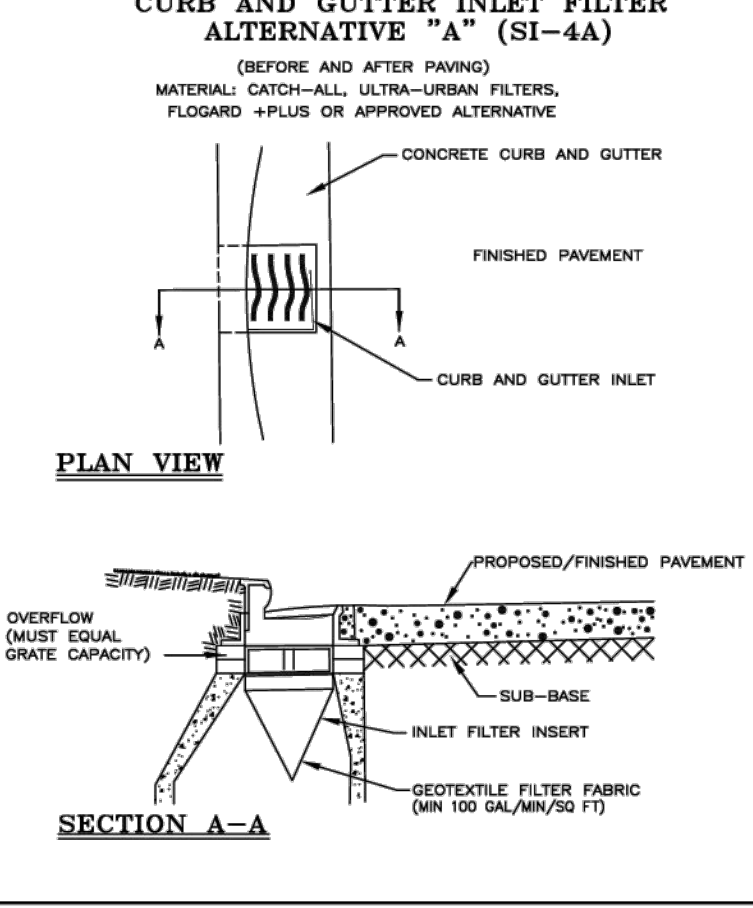
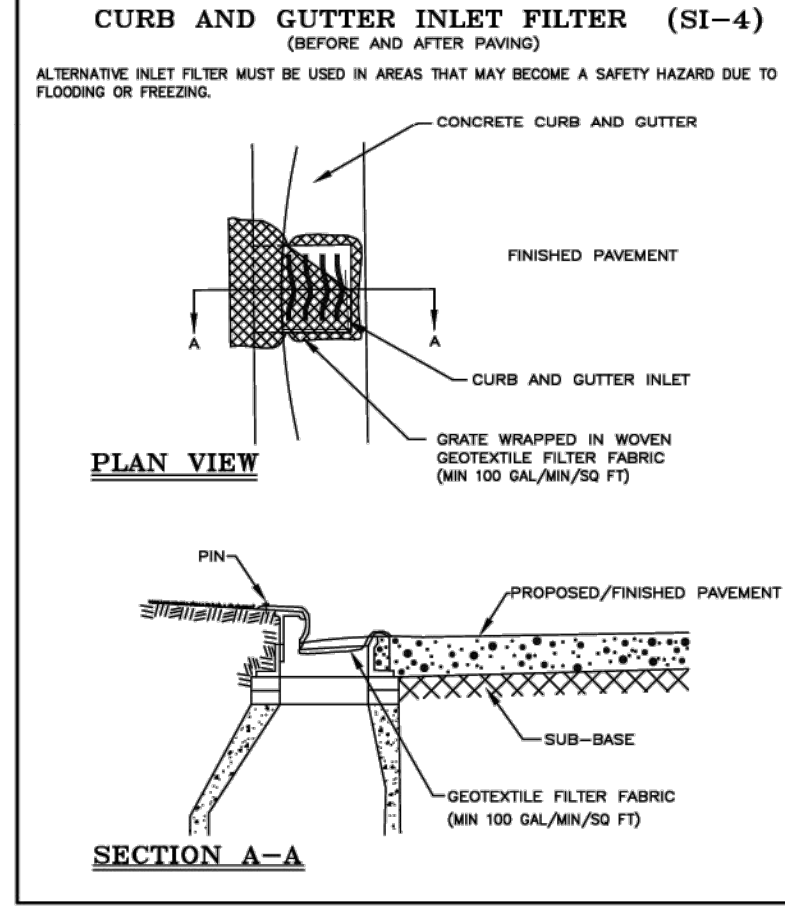
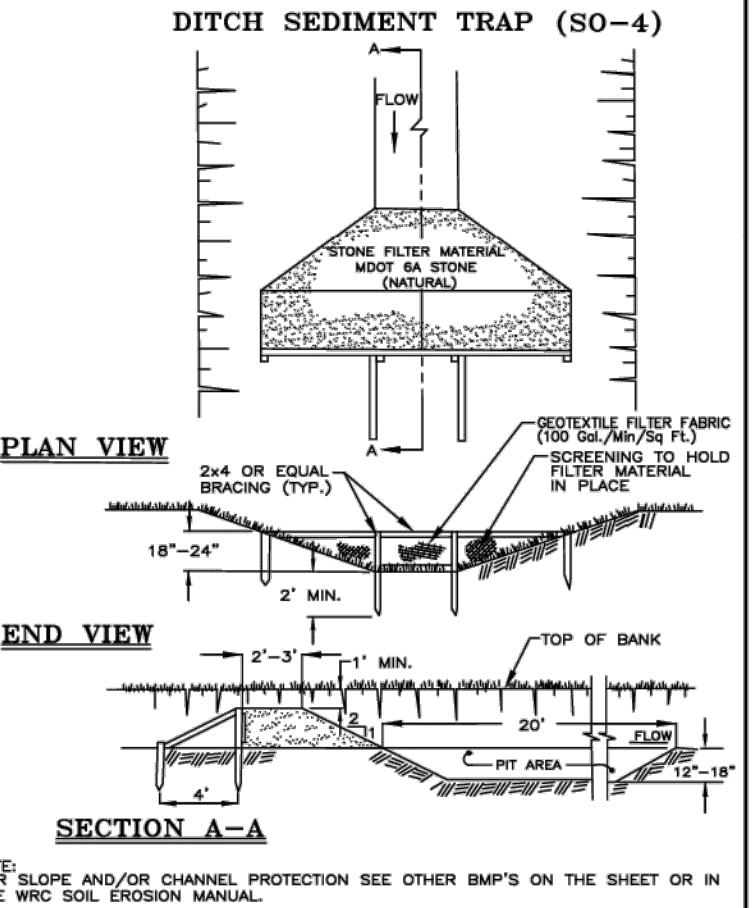
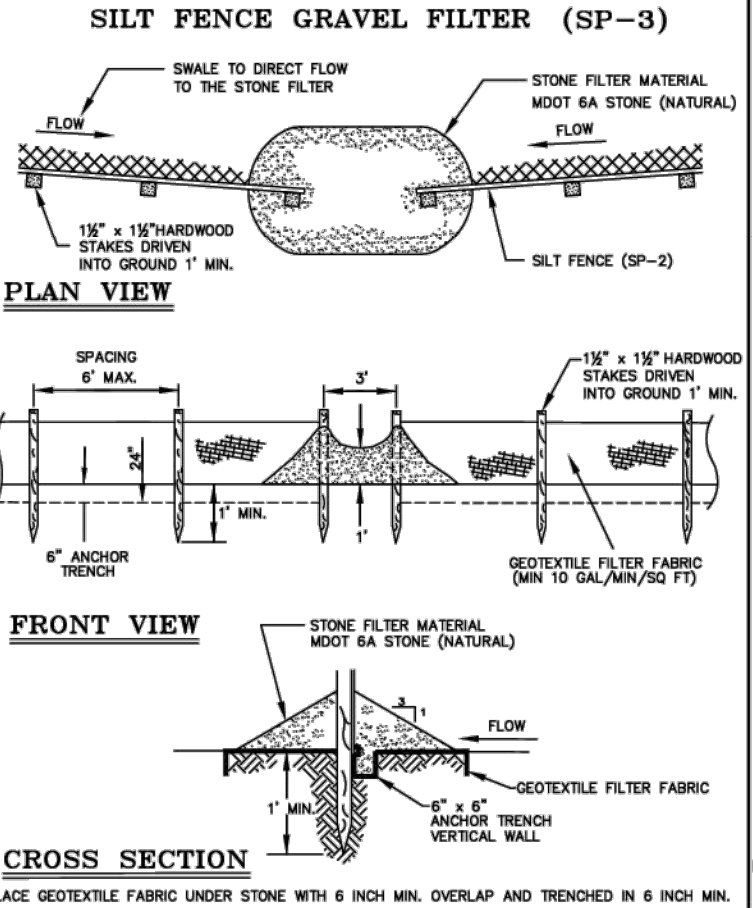
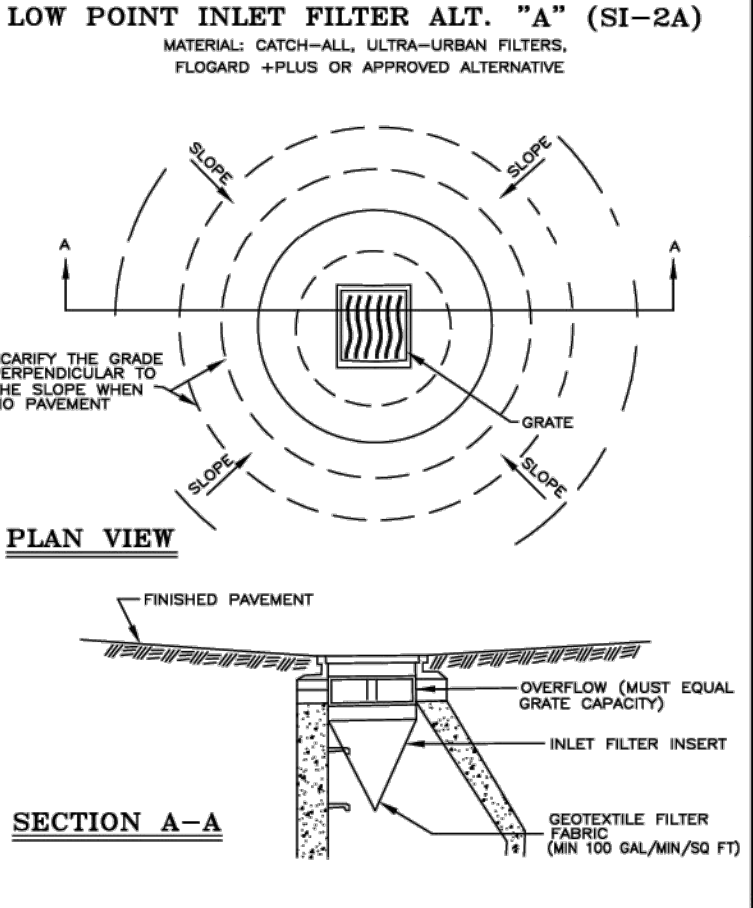
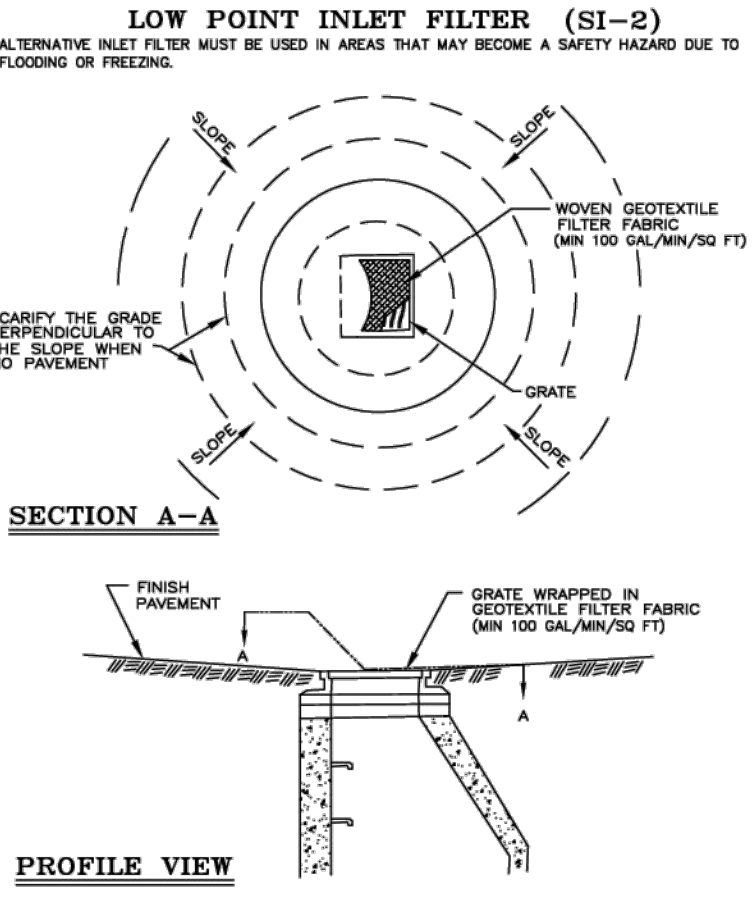
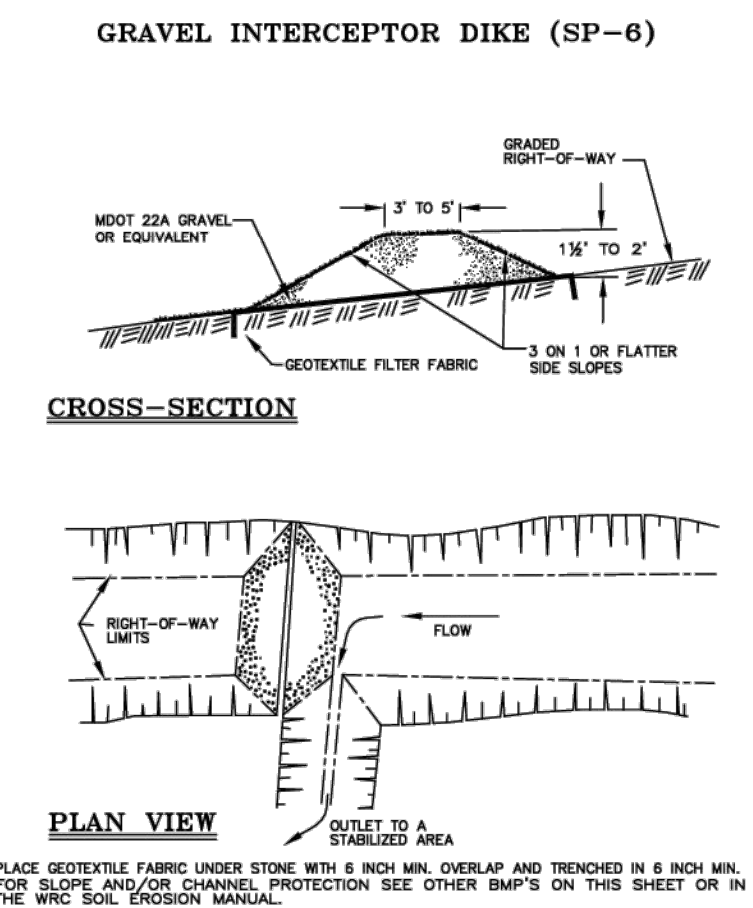
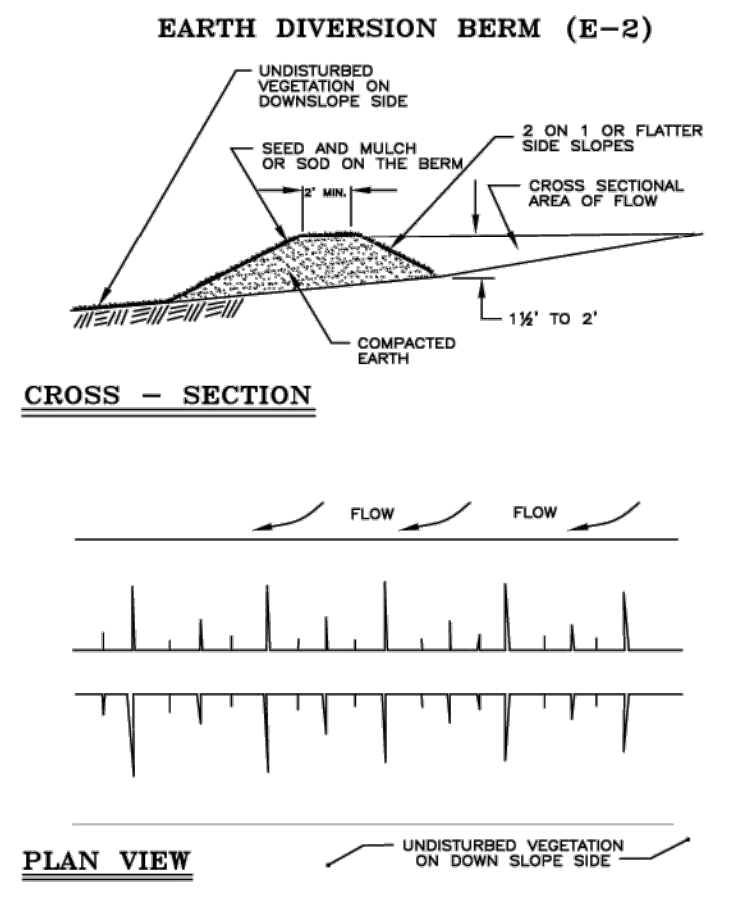
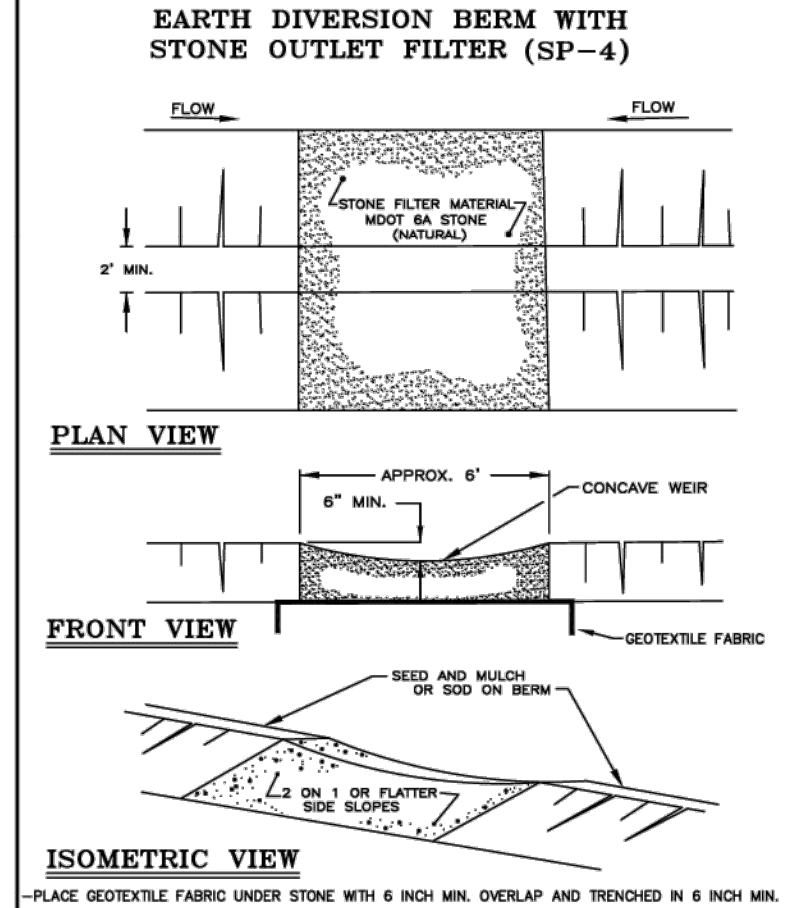
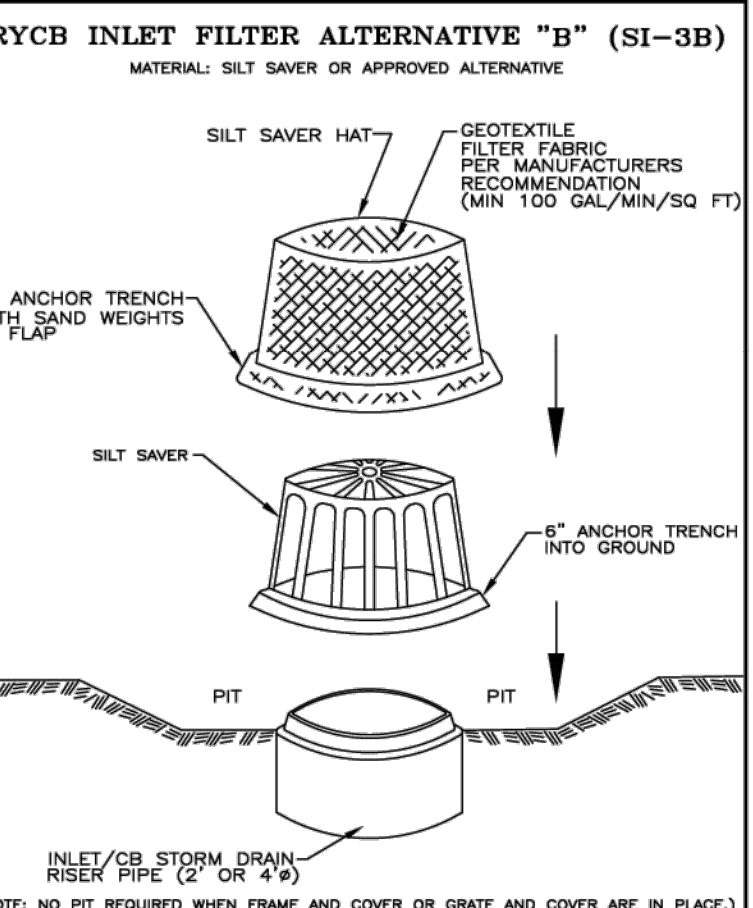
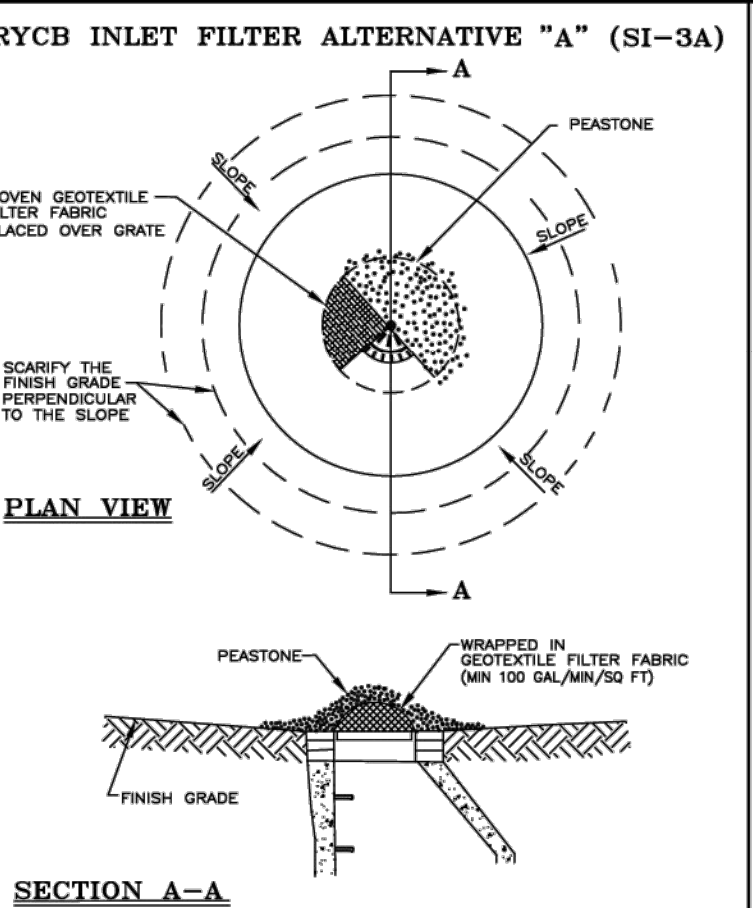
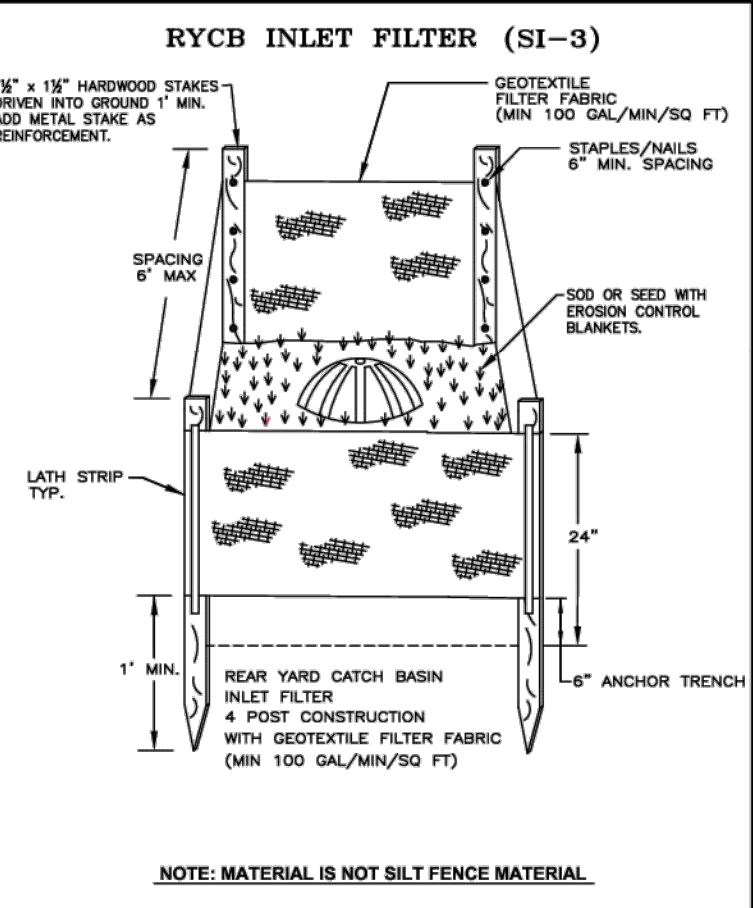
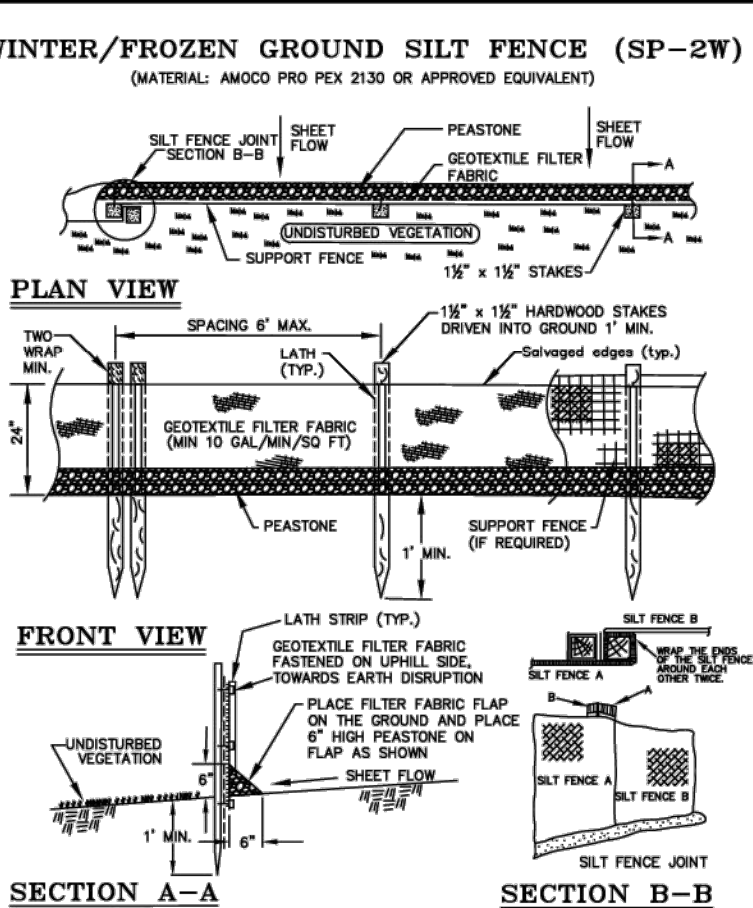
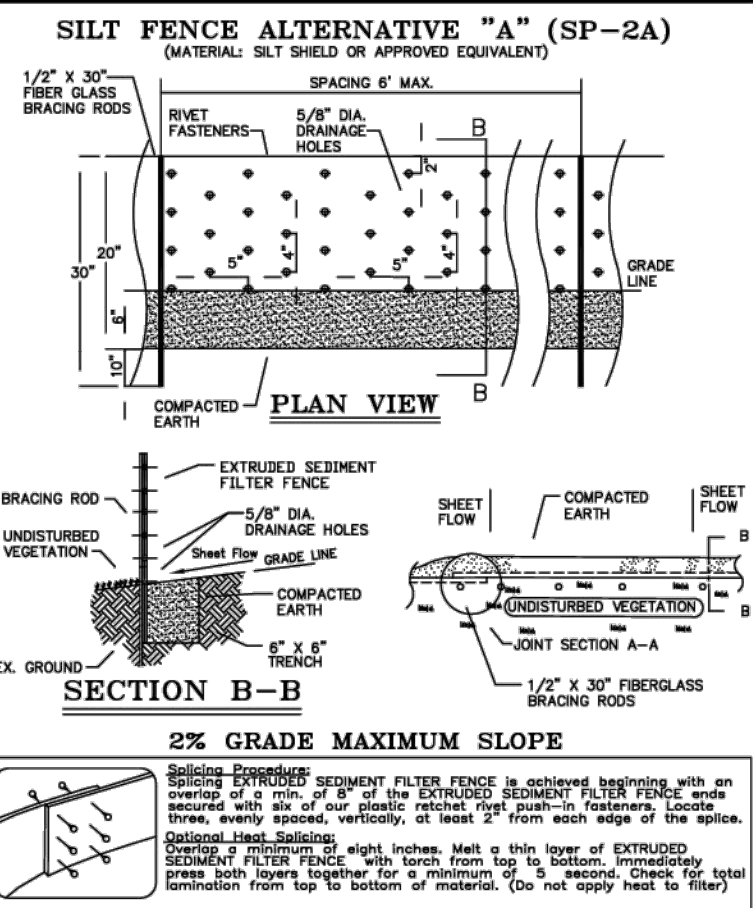
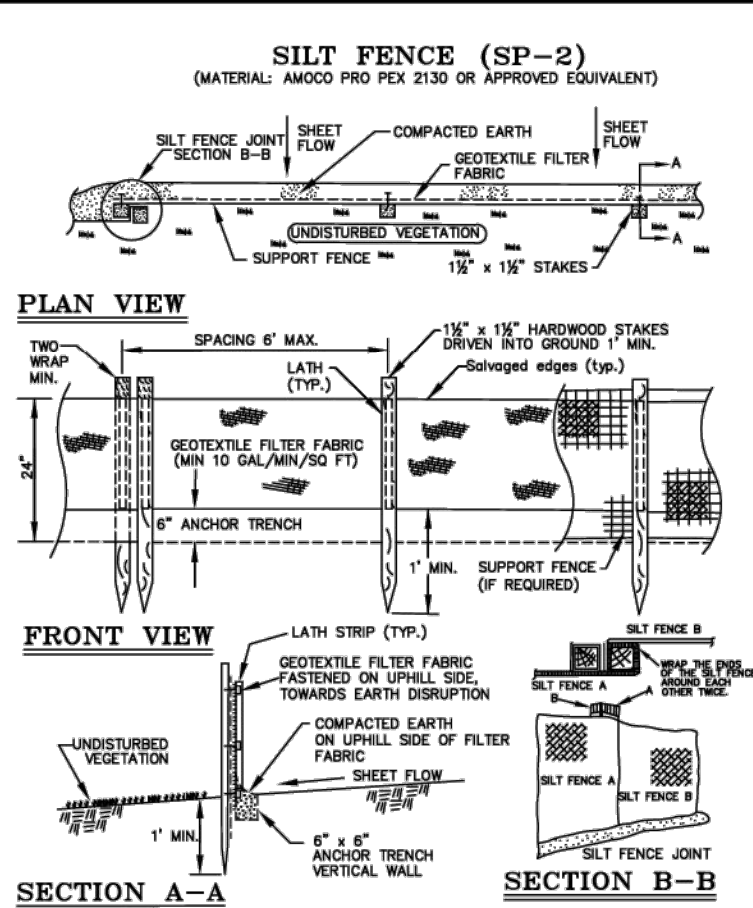
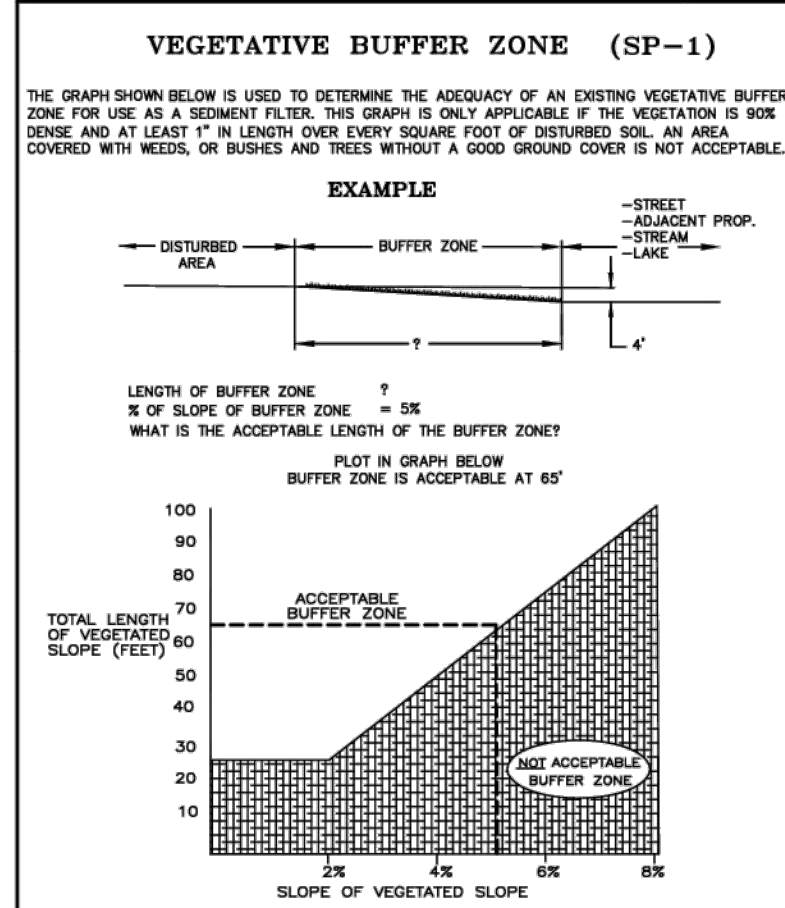
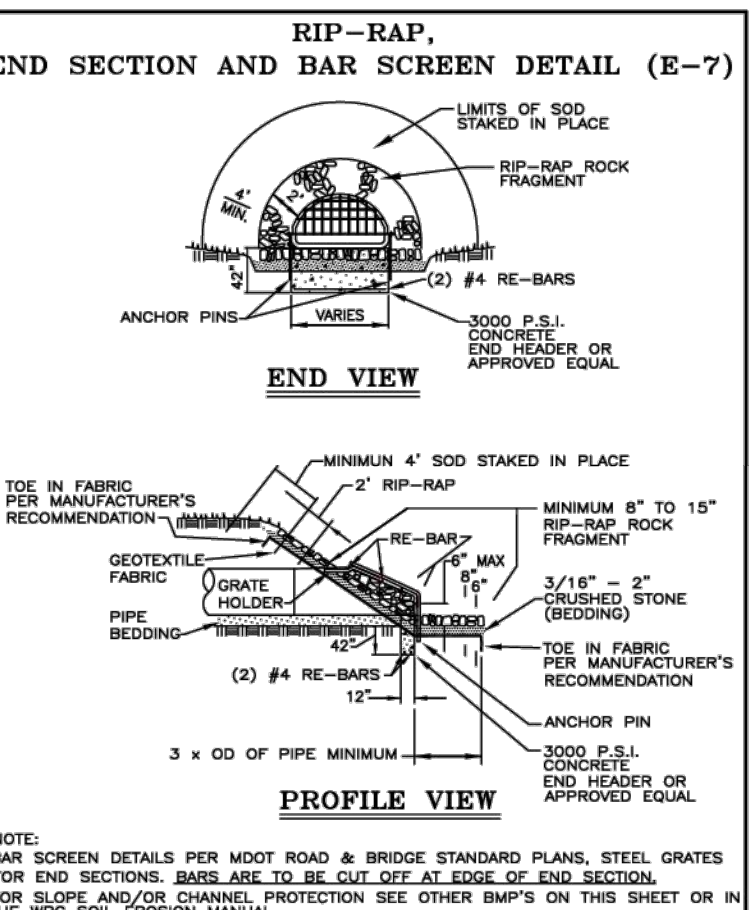
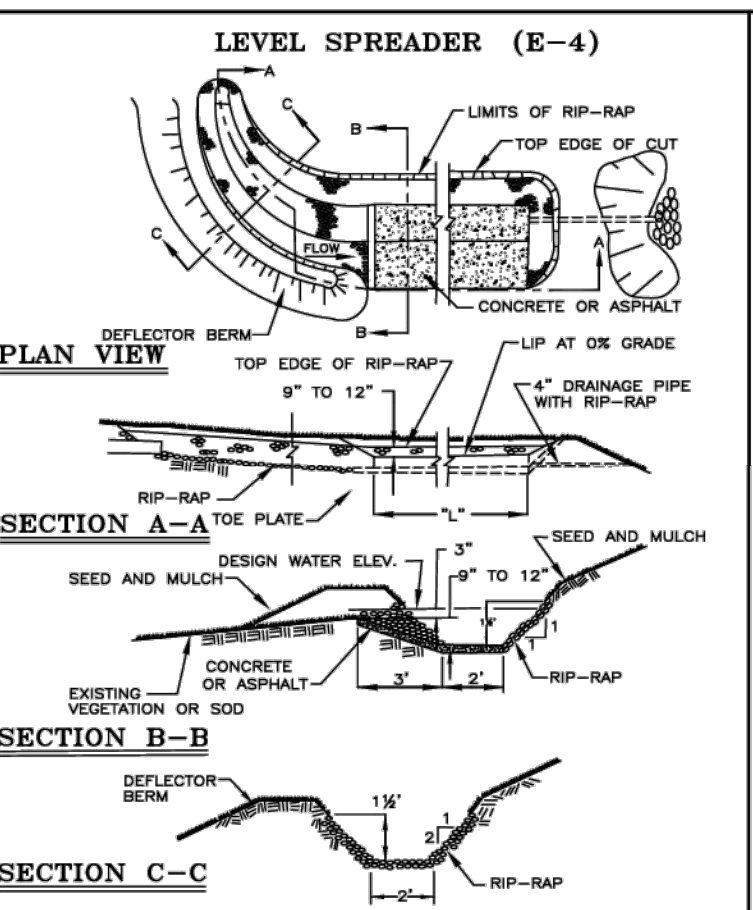
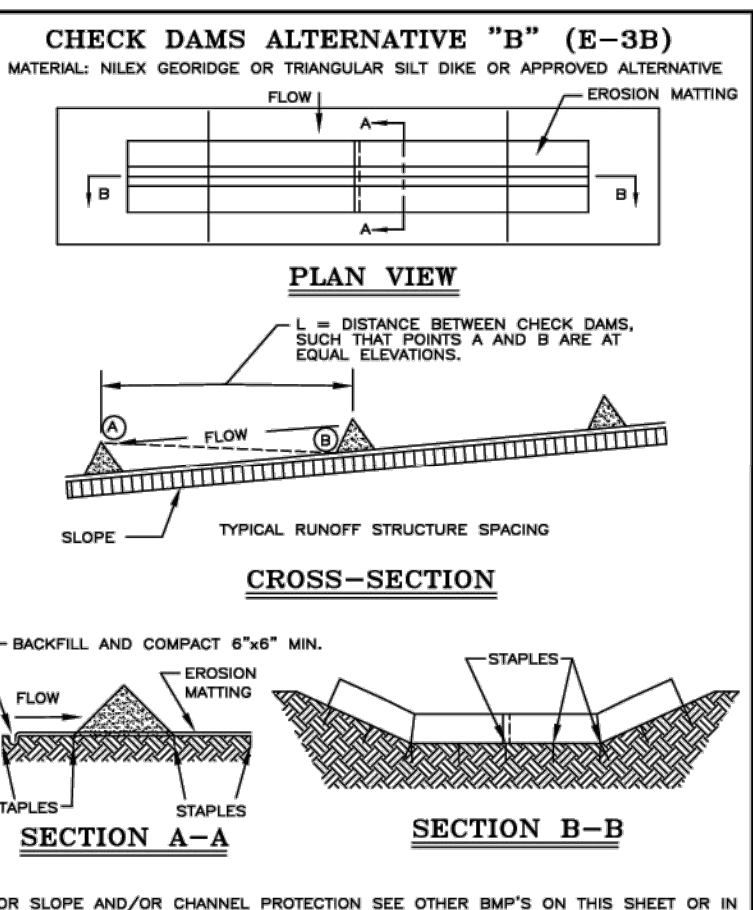
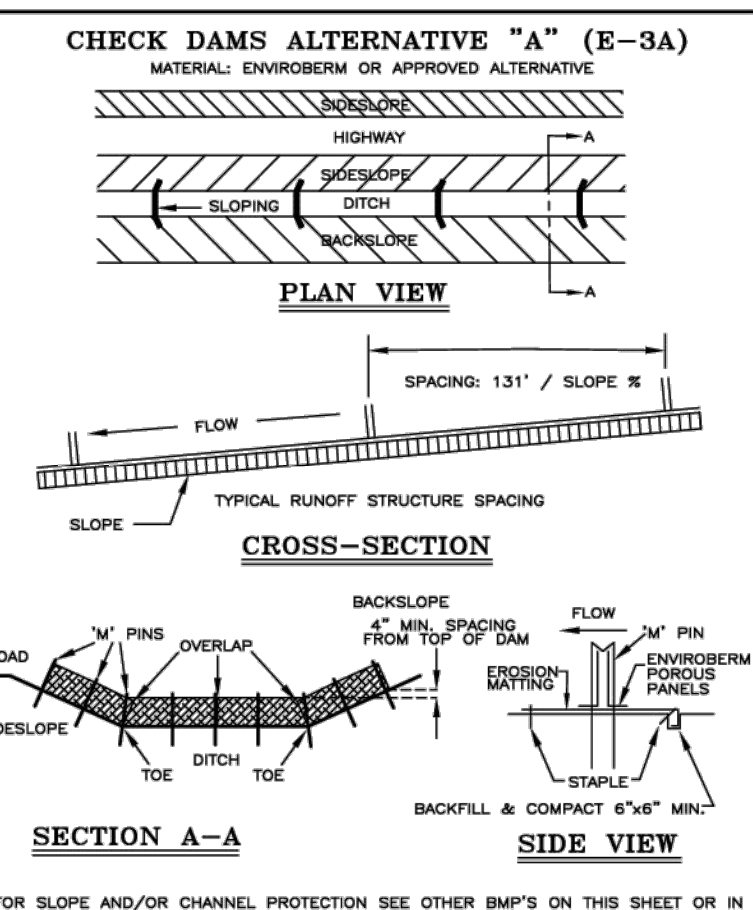
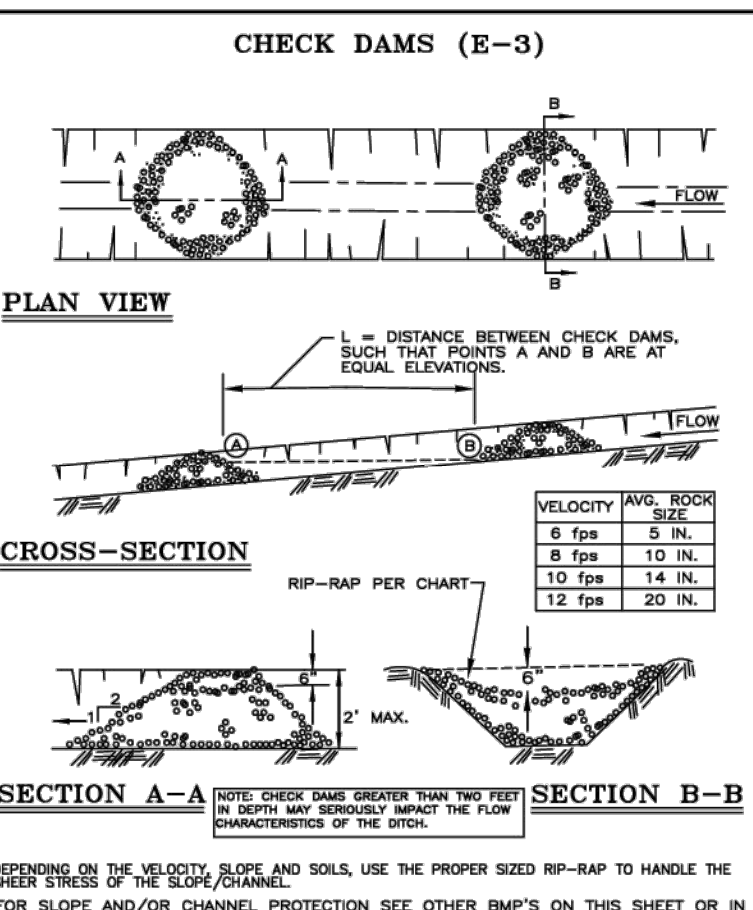
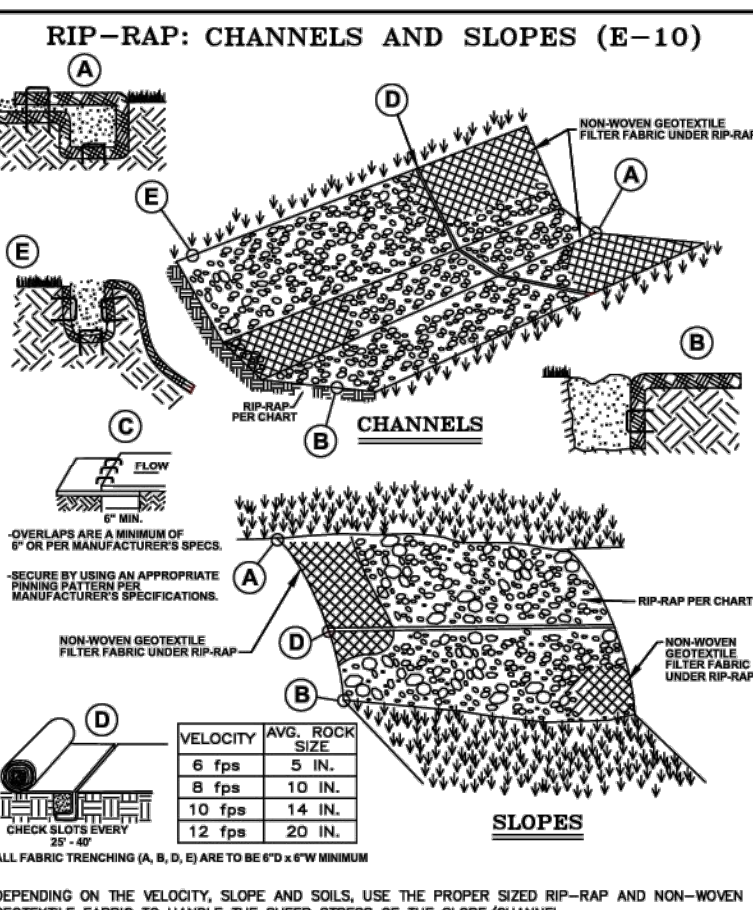
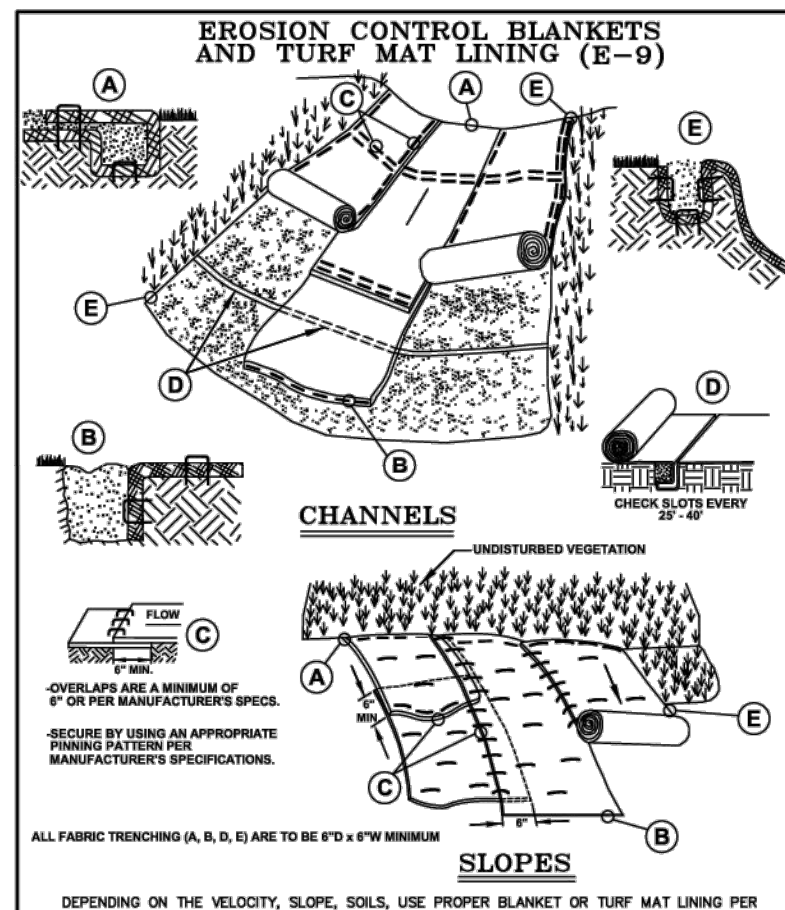
  

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SCALE:	NONE	
DESIGNED BY:	WRC WATER RESOURCES COMMISSIONER	
DRAWN BY:	Mapping	

ISSUED FOR: PLANS FOR BIDDING  
REVISION DESCRIPTION

PROJECT NUMBER: 0153-25-0180  
CITY OF SOUTHFIELD  
SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
OAKLAND COUNTY  
OCWRC STORM STANDARD DETAILS



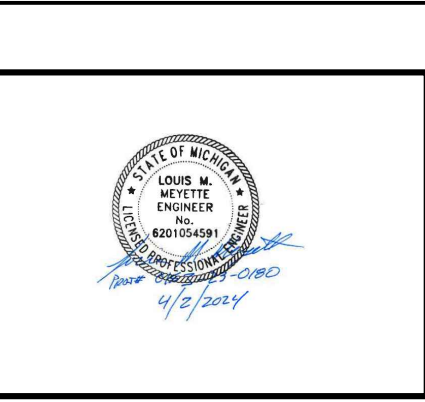


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3/29/24	DATE
ISSUED FOR: PLANS FOR BIDDING	REVISION
	DESCRIPTION
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PROJECT NUMBER: 0163-23-0160  
 PM: ZAH  
 CITY OF SOUTHFIELD  
 SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
 OAKLAND COUNTY  
 ELECTRICAL NOTES AND SYMBOLS  
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E-001

**ELEC. ABBREVIATIONS**

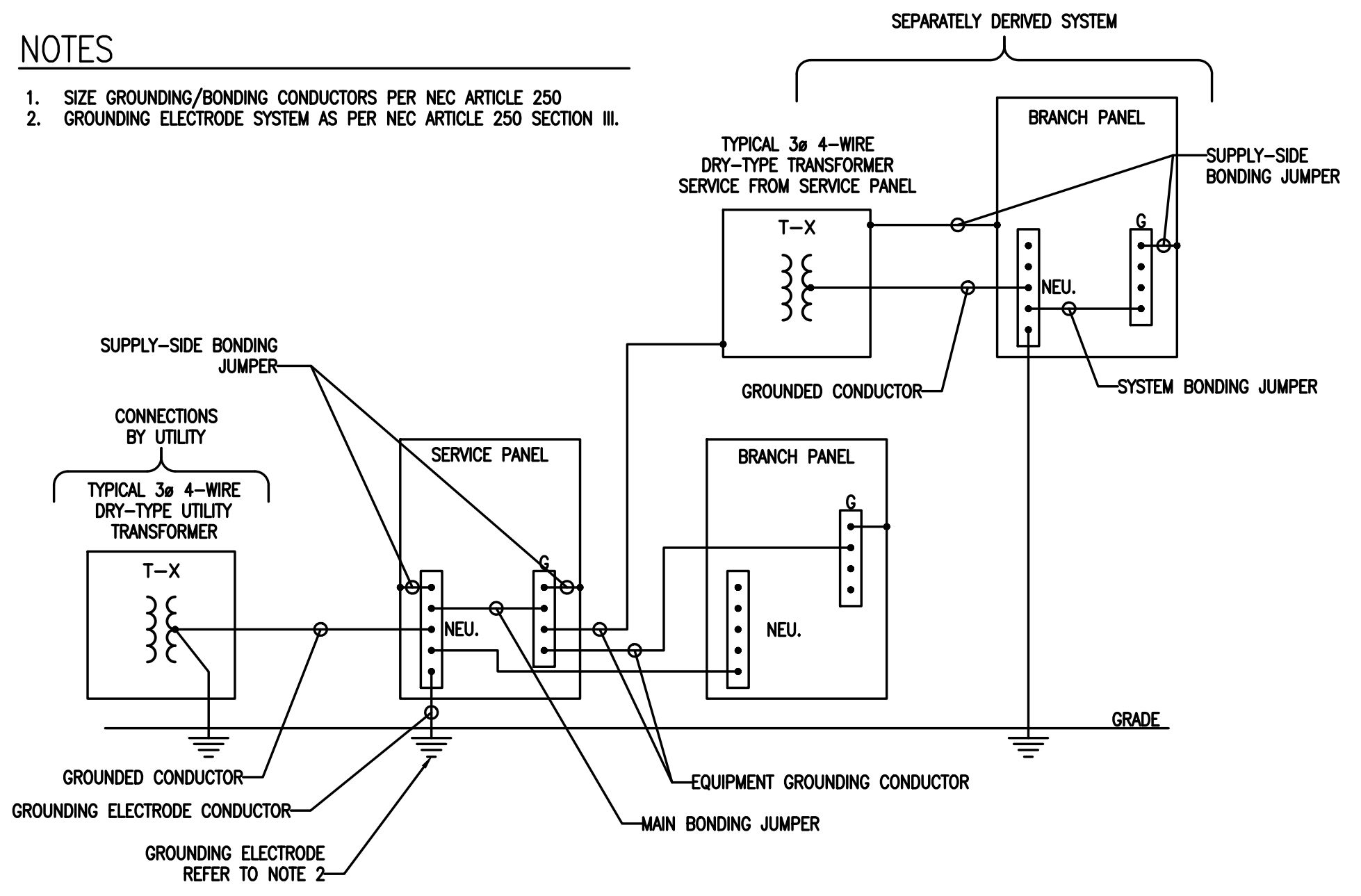
Ø	PHASE
A	AMPERE
AFF	ABOVE FINISHED FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
C	CONDUIT
CAT	CATALOGUE
CB	CIRCUIT BREAKER
CMU	CONCRETE MASONRY UNIT
CO.	COMPANY
CUH	CABIN UNIT HEATER
E	ELECTRICAL CONTRACTOR
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EWC	ELECTRIC WATER COOLER
F	FIRE ALARM
G	GROUND FAULT CIRCUIT INTERRUPTER
GFCI	EQUIPMENT GROUND
GND	
H	HAND OFF AUTO
HOA	HIGH INTENSITY DISCHARGE
HID	HIGH PRESSURE SODIUM
HPS	HEATING VENTILATION & AIR CONDITIONING
HVAC	
K	KEY OPERATED DEVICE
KVA	KILOVOLT-AMPERES
KW	KILO-WATTS
L	LIGHT EMITTING DIODE
LED	
M	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MH	METAL HALIDE
MISC	MISCELLANEOUS
MLO	MAIN LUG ONLY MOUNTED
MTD	
N	NEUTRAL
NEU	NEUTRAL NUMBER
NO	
P	PILOT
PL	
R	RECEPTACLE
RECP	ROOF TOP UNIT
RTU	
T	TELEPHONE TRANSFORMER
TEL	TELEVISION TYPICAL
TRANS	
TV	
TYP	
U	UNDERGROUND ELECTRIC UNIT HEATER
UGE	UNLESS NOTED OTHERWISE
UH	
UNO	
V	VOLT
VV	VOLT-AMPERES
W	WIRE
WNC	WIRELESS NETWORK CONTROLLER
WP	WEATHERPROOF

**GENERAL NOTES – ELECTRICAL**

- ALL ELECTRICAL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE CURRENT NATIONAL ELECTRICAL CODE AND ANY STATE/LOCAL AMENDMENTS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACQUISITION OF AN ELECTRICAL PERMIT AND SCHEDULING OF THE NECESSARY INSPECTIONS. UPON COMPLETION OF THE WORK THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE OWNER EVIDENCE OF INSPECTION APPROVAL.
- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION REQUIRED WITH THE ELECTRIC UTILITY SERVING THE FACILITY. UTILITY COSTS SHALL BE PAID SEPARATELY BY THE OWNER.

**NOTES**

- SIZE GROUNDING/BONDING CONDUCTORS PER NEC ARTICLE 250
- GROUNDING ELECTRODE SYSTEM AS PER NEC ARTICLE 250 SECTION III.

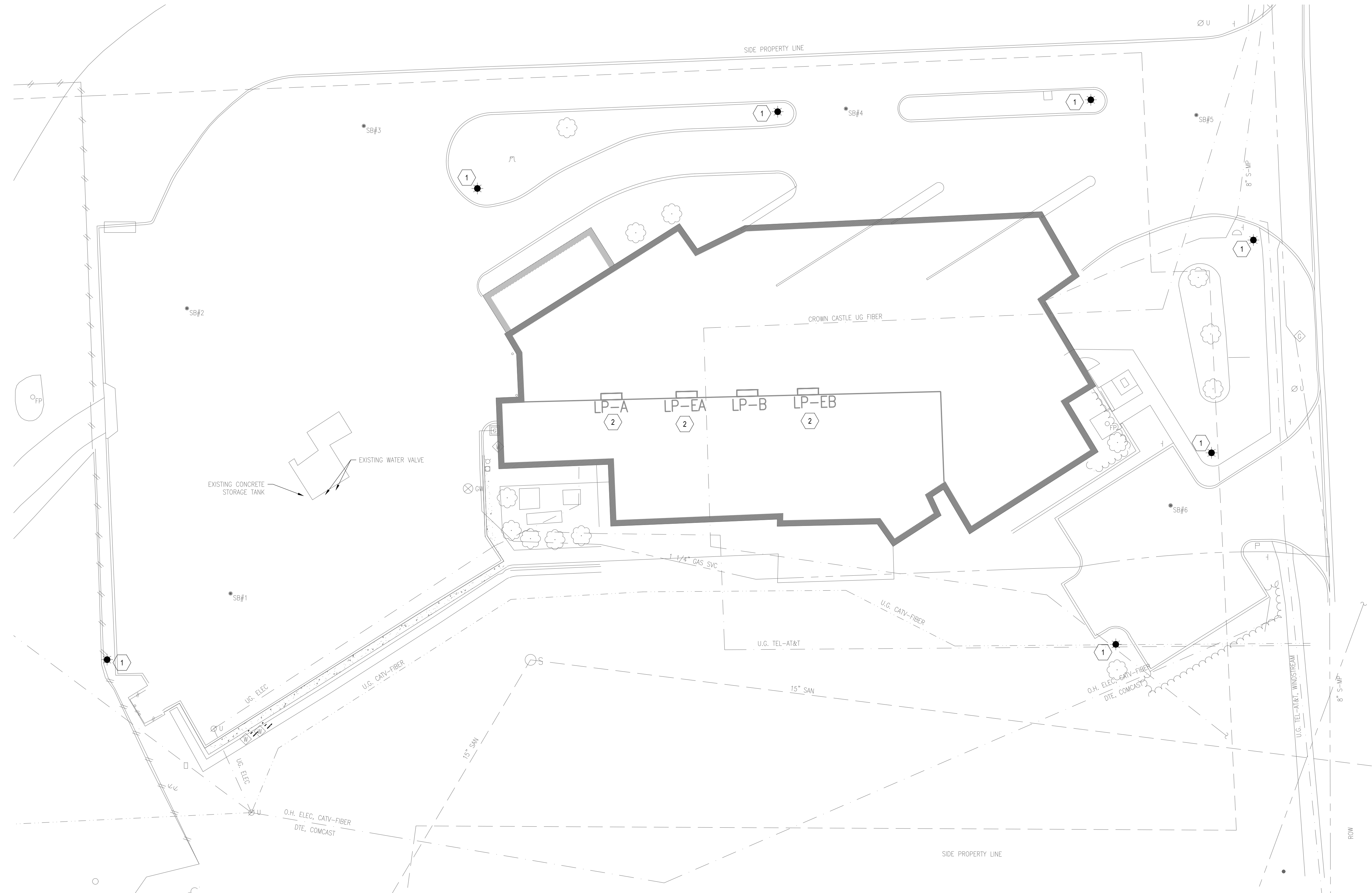


**ELECTRICAL LEGEND**

<p><b>LIGHT FIXTURES</b></p> <ul style="list-style-type: none"> <li>□ ○ SURFACE / CEILING MOUNT</li> <li>■ ● EMERGENCY SURFACE / CEILING MOUNT</li> <li>○ ○ PENDANT / CHAIN MOUNT</li> <li>■ ● EMERGENCY PENDANT / CHAIN MOUNT</li> <li>□ ○ RECESSED MOUNT</li> <li>■ ● EMERGENCY RECESSED MOUNT</li> <li>— TRACK STRIP</li> <li>○ (INT.) (EXT.) WALL MOUNT</li> <li>● (INT.) (EXT.) EMERGENCY WALL MOUNT</li> <li>○ EXTERIOR POLE MOUNT</li> <li>○ EXTERIOR POST MOUNT</li> <li>□ INTERIOR EMERGENCY WALL PACK</li> <li>○ (WALL) (CEILING) EXIT SIGN</li> <li>○ (LIGHT) (NO LIGHT) CEILING FAN</li> </ul> <p><b>POWER DISTRIBUTION</b></p> <ul style="list-style-type: none"> <li>□ DISCONNECT SWITCH</li> <li>□ FUSED DISCONNECT SWITCH</li> <li>□ COMBINATION MOTOR STARTER W/ DISCONNECT SWITCH</li> <li>□ MOTOR STARTER</li> <li>□ ELECTRICAL METER</li> <li>DP# DISTRIBUTION PANEL</li> <li>P## ELECTRICAL POWER PANEL SURFACE MOUNT</li> <li>P## ELECTRICAL POWER PANEL FLUSH MOUNT</li> <li>R RELAY</li> <li>T ELECTRICAL TRANSFORMER</li> <li>PB ELECTRICAL PULL BOX</li> <li>VARIABLE FREQUENCY DRIVE</li> <li>○ SINGLE PHASE MOTOR</li> <li>○ THREE PHASE MOTOR</li> <li>□ HH HAND HOLE</li> <li>J J J JUNCTION BOX</li> </ul> <p><b>RACEWAY NOTES</b></p> <ol style="list-style-type: none"> <li>MINIMUM SIZE OF RIGID CONDUIT SHALL BE 3/4".</li> <li>MINIMUM SIZE OF FLEX CONDUIT SHALL BE 1/2".</li> <li>MINIMUM SIZE WALL BOX IN CMU SHALL BE 4"x4".</li> <li>MINIMUM SIZE OF UNDERGROUND CONDUIT SHALL BE 1 1/4".</li> </ol>	<p><b>RECEPTACLE OUTLETS</b></p> <ul style="list-style-type: none"> <li>Φ SIMPLEX RECEPTACLE</li> <li>DUPLX GROUNDED RECEPTACLE           <ul style="list-style-type: none"> <li>CTR MOUNTED ABOVE COUNTER</li> <li>GFCI</li> <li>GC GFCI-MOUNTED ABOVE COUNTER</li> <li>U DUAL USB PORTS</li> <li>UC DUAL USB PORTS ABOVE COUNTER</li> <li>WP WEATHERPROOF COVER W/ GFCI</li> <li>T TAMPERPROOF</li> <li>TC TAMPERPROOF ABOVE COUNTER</li> <li>TGC TAMPERPROOF GFCI ABOVE COUNTER</li> </ul> </li> <li>208V, 1 Ø STRAIGHT BLADE RECEPTACLE</li> <li>D DRYER RECEPTACLE</li> <li>R RANGE RECEPTACLE</li> <li>QUADRUPLEX RECEPTACLE</li> <li>DUPLX RECEPT ON EMERGENCY POWER</li> <li>FLOOR BOX</li> <li>3Ø RECEPTACLE</li> </ul> <p><b>SWITCH OUTLETS</b></p> <p>SWITCHES: Y = DESIGNATION BELOW Z = ZONE DESIGNATION</p> <ul style="list-style-type: none"> <li>1 SINGLE POLE</li> <li>2 TWO POLE</li> <li>3 THREE WAY</li> <li>4 FOUR WAY</li> <li>DM DIMMER</li> <li>F FAN</li> <li>K KEY OPERATED</li> <li>LV LOW VOLTAGE</li> <li>M MOTION DETECTION</li> <li>P PILOT LIGHT</li> <li>T TIMER</li> </ul> <p><b>SENSORS:</b> X = DESIGNATION BELOW</p> <ul style="list-style-type: none"> <li>CEILING WALL ○ DAYLIGHT</li> <li>○ OCCUPANCY</li> <li>○ VACANCY</li> <li>PB EMERGENCY STOP SWITCH</li> <li>□ PUSH BUTTON SWITCH</li> <li>PC PHOTOCELL</li> <li>○ CEILING MOUNTED PULL SWITCH</li> <li>○ WIRELESS NETWORK LIGHTING CONTROLLER</li> <li>XX XX = CONTROLLER INDICATOR</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>CR CARD READER</li> <li>DC MAGNETIC SWITCH (DOOR CONTACT)</li> <li>DL ELECTRONIC DOOR LOCK</li> <li>DO MOTORIZED DOOR OPERATOR</li> <li>ES ELECTRIC STRIKE</li> <li>K KEYPAD ENTRY DEVICE</li> <li>○ SECURITY CAMERA</li> </ul>	<p><b>FIRE ALARM SYSTEM</b></p> <ul style="list-style-type: none"> <li>○ OUTDOOR BELL / CHIME</li> <li>○ SMOKE DETECTOR</li> <li>○ SMOKE DETECTOR WITH AUDIBLE BASE</li> <li>○ SMOKE/CARBON MONOXIDE DETECTOR</li> <li>○ DUCT SMOKE DETECTOR</li> <li>○ HEAT DETECTOR</li> <li>CEILING WALL ○ FIRE ALARM HORN/SSTROBE</li> <li>○ FIRE ALARM STROBE</li> <li>○ FIRE ALARM HORN</li> <li>○ FIRE ALARM SPEAKER/SSTROBE</li> <li>○ FIRE ALARM SPEAKER</li> <li>F FIRE ALARM PULL STATION</li> <li>○ ELECTRO./MAG DOOR HOLD OPEN</li> <li>○ END OF LINE RESISTOR</li> <li>FS FIRE ALARM FLOW SWITCH</li> <li>PS FIRE ALARM PRESSURE SWITCH</li> <li>TS FIRE ALARM TAMPER SWITCH</li> <li>FAA FIRE ALARM ANNUNCIATOR PANEL</li> <li>FACP FIRE ALARM CONTROL PANEL</li> <li>HSS HOOD SUPPRESSION SYSTEM FIRE ALARM CONTACT</li> </ul> <p><b>TELEPHONE/COMMUNICATIONS</b></p> <p>CEILING WALL FLOOR FURNITURE</p> <ul style="list-style-type: none"> <li>X=NUMBER AND TYPE OF PORTS</li> <li>C COAXIAL PORT</li> <li>D DATA PORT</li> <li>P PHONE PORT</li> <li>W WIRELESS ACCESS POINT</li> <li>CEILING WALL ○ SPEAKER</li> <li>IC INTERCOM CALL BOX</li> <li>IC ENTRANCE CALL SYSTEM</li> <li>B BELL</li> <li>M MICROPHONE JACK</li> <li>PS POWER SUPPLY</li> <li>WG REQUIRES WIRE GUARD</li> <li>NURSE NURSE CALL MAIN PANEL</li> <li>N NURSE CALL PULL STATION</li> <li>N NURSE CALL LIGHT</li> <li>C CLOCK</li> </ul>																												
	<p><b>WIRES</b></p> <table border="1"> <thead> <tr> <th></th> <th>PROPOSED</th> <th>EXISTING</th> <th>DEMOLISH</th> </tr> </thead> <tbody> <tr> <td>POWER CIRCUIT WIRING</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>UNDERGROUND WIRING</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>SWITCH LOOP WIRING</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>UN-SWITCHED HOT WIRING</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>LOW VOLTAGE WIRING</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>DATA WIRING</td> <td>—</td> <td>—</td> <td>—</td> </tr> </tbody> </table>			PROPOSED	EXISTING	DEMOLISH	POWER CIRCUIT WIRING	—	—	—	UNDERGROUND WIRING	—	—	—	SWITCH LOOP WIRING	—	—	—	UN-SWITCHED HOT WIRING	—	—	—	LOW VOLTAGE WIRING	—	—	—	DATA WIRING	—	—	—
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UNDERGROUND WIRING	—	—	—																											
SWITCH LOOP WIRING	—	—	—																											
UN-SWITCHED HOT WIRING	—	—	—																											
LOW VOLTAGE WIRING	—	—	—																											
DATA WIRING	—	—	—																											



DRAWING PATH: P:\0126\_01650163230160\_Fire Stations 4 & 5\_Park Imps\Drawings\Civil\Removal\230160FREN-ELEC.dwg Apr 02, 2024 - 11:19pm



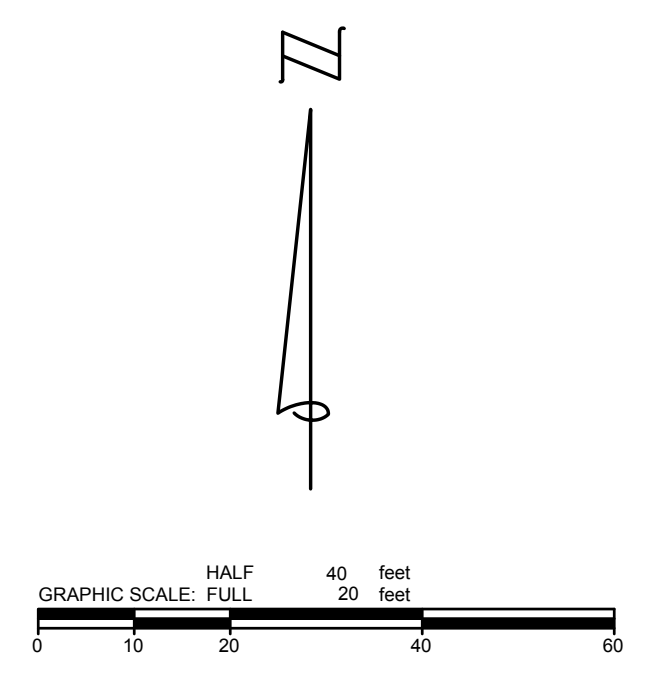
**GENERAL DEMOLITION NOTES**

1. DRAWINGS SHOW MAJOR DEMOLITION ONLY; THE CONTRACTOR SHALL PROVIDE ALL DEMOLITION FOR THE COMPLETION OF THE WORK WHETHER EXPLICITLY SHOWN OR NOT.
2. THE OWNER RESERVES THE RIGHT TO KEEP ANY REMOVED EQUIPMENT OR MATERIALS. ALL DEMOLITION DEBRIS TO BE REMOVED FROM THE SITE AND DISPOSED OF IN AN APPROVED LANDFILL.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TEMPORARY EXTERIOR OPENINGS MADE FROM DEMOLITION WORK TO ENSURE THEY ARE WEATHER TIGHT AT THE END OF EACH DAY.
4. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL PATCHING WHERE CONDUITS AND JUNCTION BOXES ARE REMOVED UNLESS OTHERWISE NOTED. ANY JUNCTION BOXES REMAINING IN PLACE THAT HAVE HAD DEVICES REMOVED ARE TO RECEIVE BLANK COVER PLATES MATCHING PROJECT REQUIREMENTS.
5. CONDUITS AND CONDUCTORS ABANDONED AS PART OF THE WORK SHALL BE DEMOLISHED WHERE NOT BURIED IN WALLS OR UNDERGROUND. CAP OR PLUG ANY ABANDONED CONDUITS THAT REMAIN.
6. WHERE DEVICES ARE REMOVED FROM THE MIDDLE OF A CIRCUIT, THE CONTRACTOR SHALL BE RESPONSIBLE TO RE-ROUTE THE CIRCUIT TO MAINTAIN CIRCUIT INTEGRITY TO REMAINING DEVICES.
7. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES FOUND IN EXISTING CONDITIONS.
8. CONTRACTOR TO COORDINATE WITH THE OWNER OR ENGINEER A MINIMUM OF 24 HOURS IN ADVANCE OF SHUTTING OFF OR DISCONNECTING ANY UTILITIES. CONTRACTOR TO ENSURE ALL EXISTING SYSTEMS TO REMAIN ARE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT UNLESS OTHERWISE DIRECTED BY THE ENGINEER/OWNER.
9. CONTRACTOR TO TAKE ALL PRECAUTIONS NECESSARY TO PROTECT ITEMS NOT INTENDED TO BE DEMOLISHED AND TO RESTORE TO EXISTING CONDITIONS ANY ITEMS DAMAGED THAT WERE NOT INTENDED TO BE DEMOLISHED.



**ELECTRICAL DEMOLITION KEYNOTES**

- # DENOTES PLAN KEY NOTE ITEM USING NUMBERS BELOW.
1. LIGHT POLE TO BE REMOVED. CONDUCTORS TO BE REMOVED BACK TO SOURCE PANEL AND REMOVE FROM CONNECTED BREAKER. CONDUIT TO BE CAPPED AND ABANDONED BELOW GRADE.
  2. PARKING LOT LIGHTS ARE CURRENTLY FEED FROM LP-A #8, LP-EA #25, LP-EB #29. CIRCUITS WILL BE RE-USED TO FEED THE NEW LIGHT POLES.



REVISION	DESCRIPTION	DATE

PROJECT NUMBER: 0165-23-0160  
 PM: ZAH  
 CITY OF SOUTHFIELD  
 SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
 OAKLAND COUNTY  
 ELECTRICAL DEMOLITION SITE PLAN  
 ISSUED FOR: PLANS FOR BIDDING  
 DATE: 3/29/24



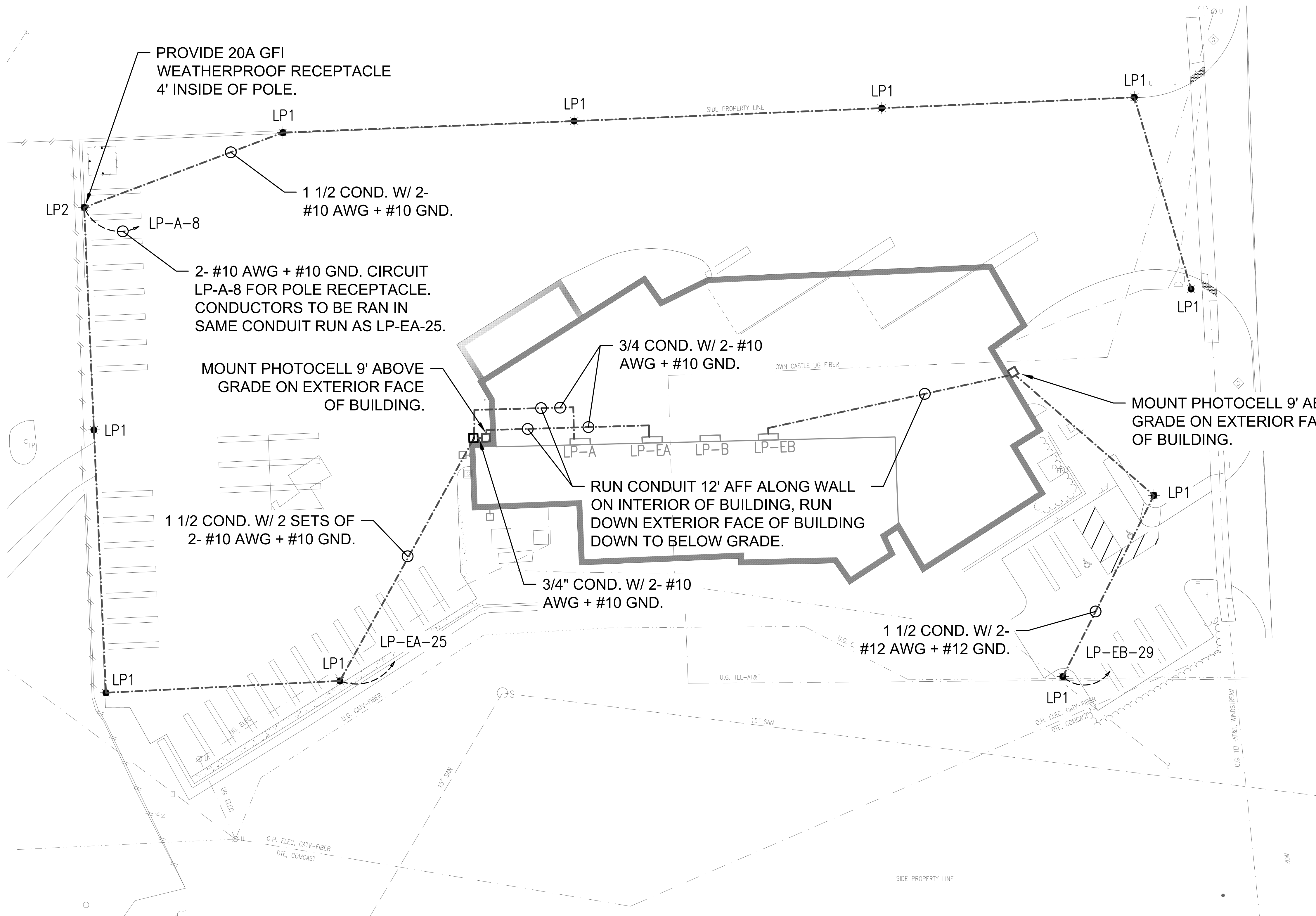
Know what's below.  
Call before you dig.

ED101

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DRAWING PATH: P:\0126\_01650163230160\_Fire Stations 4 & 5\_Park ImpsDrawings\ConPlans\_Constr\2018\CON-ELEC.dwg Apr 02, 2024 - 11:19pm



PROVIDE 20A GFI WEATHERPROOF RECEPTACLE 4' INSIDE OF POLE.

1 1/2 COND. W/ 2- #10 AWG + #10 GND.

2- #10 AWG + #10 GND. CIRCUIT LP-A-8 FOR POLE RECEPTACLE. CONDUCTORS TO BE RAN IN SAME CONDUIT RUN AS LP-EA-25.

MOUNT PHOTOCELL 9' ABOVE GRADE ON EXTERIOR FACE OF BUILDING.

1 1/2 COND. W/ 2 SETS OF 2- #10 AWG + #10 GND.

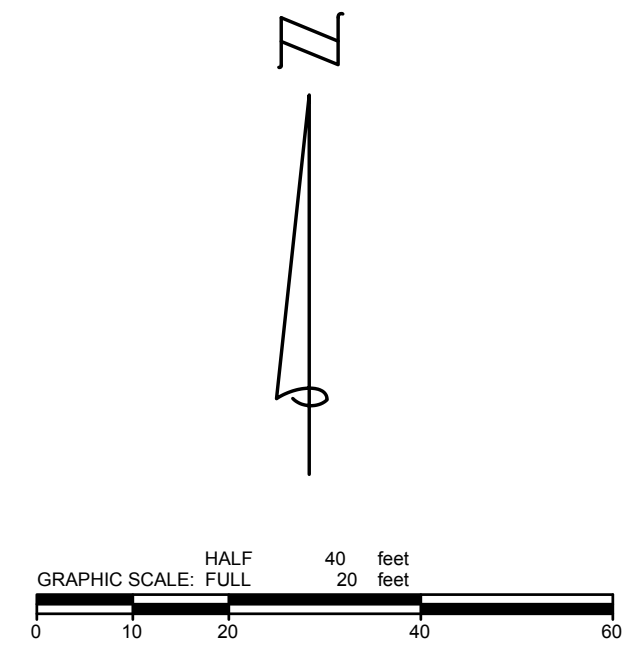
3/4 COND. W/ 2- #10 AWG + #10 GND.

RUN CONDUIT 12' AFF ALONG WALL ON INTERIOR OF BUILDING, RUN DOWN EXTERIOR FACE OF BUILDING DOWN TO BELOW GRADE.

3/4" COND. W/ 2- #10 AWG + #10 GND.

1 1/2 COND. W/ 2- #12 AWG + #12 GND.

MOUNT PHOTOCELL 9' ABOVE GRADE ON EXTERIOR FACE OF BUILDING.



REVISION	DESCRIPTION	DATE

PROJECT NUMBER: 0158-23-0160  
 CITY OF SOUTHFIELD  
 SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
 OAKLAND COUNTY  
 ELECTRICAL POWER SITE PLAN



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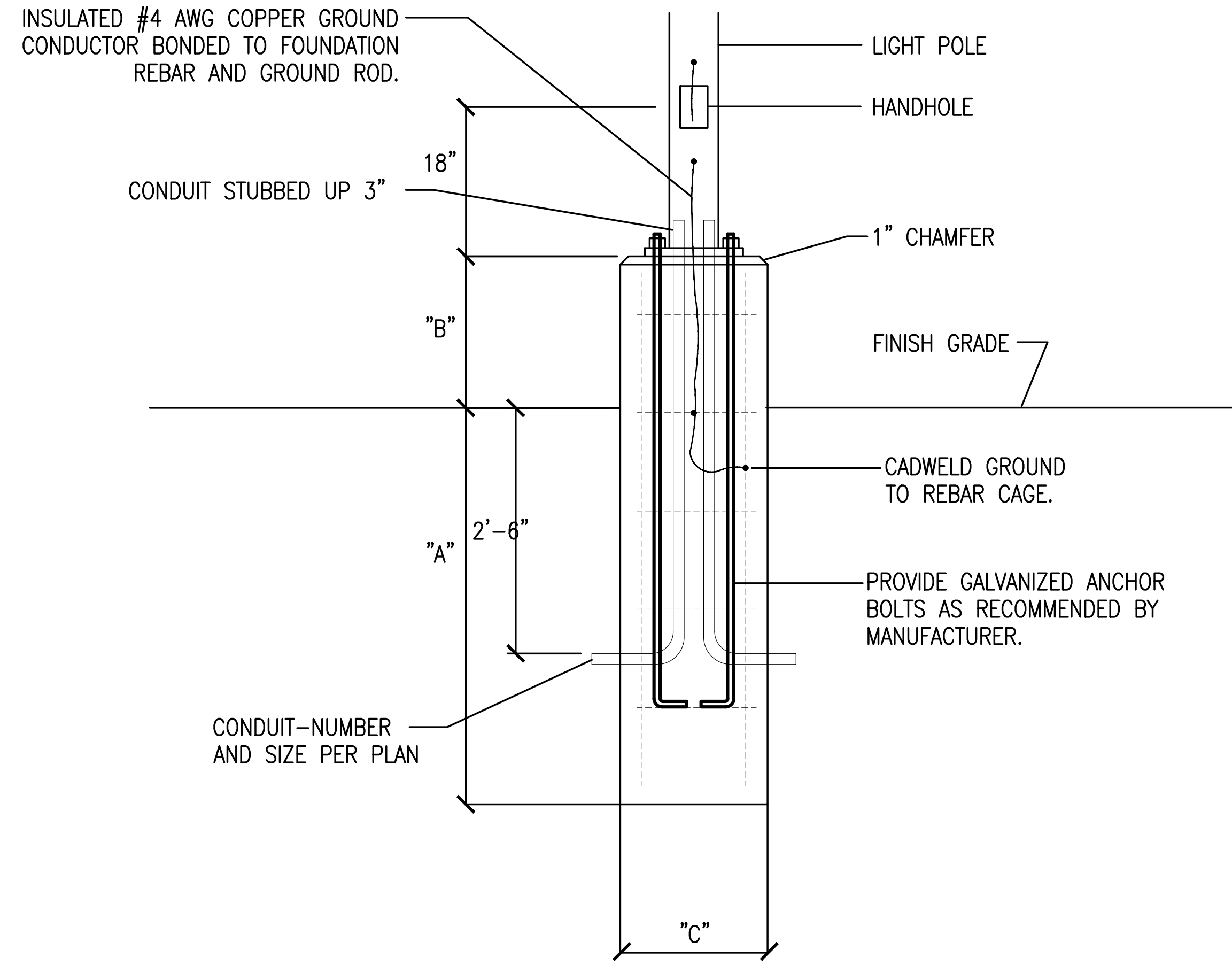


ISSUED FOR: PLANS FOR BIDDING  
REVISION DESCRIPTION DATE

PROJECT NUMBER: 0182-23-0180  
PM: ZAH

CITY OF SOUTHFIELD  
SOUTHFIELD FIRE STATIONS 4 & 5 PAVING IMPROVEMENTS  
OAKLAND COUNTY  
ELECTRICAL DETAILS

E-501



**1 LIGHT POLE BASE DETAIL**  
NO SCALE

POLE SCHEDULE			
POLE PART: SSS425SF2			
POLE HEIGHT	"A"	"B"	"C"
10'-12' HIGH	3'-6"	6"	18" DIA. CONCRETE BASE. (7) #6 BARS VERTICAL, #3 TIES @ 12" OC
15' HIGH	4'-0"		
20' HIGH	5'-0"	1'-6"	18" DIA. CONCRETE BASE. (7) #6 BARS VERTICAL, #3 TIES @ 12" OC
25' HIGH	6'-0"	2'-6"	24" DIA. CONCRETE BASE. (6) #8 BARS VERTICAL, #3 TIES @ 12" OC
30' HIGH	6'-0"	2'-6"	24" DIA. CONCRETE BASE. (6) #8 BARS VERTICAL, #3 TIES @ 12" OC
40' HIGH	7'-0"	2'-6"	24" DIA. CONCRETE BASE. (6) #8 BARS VERTICAL, #3 TIES @ 12" OC



